DOCUMENT RESUME

ED 023 851 VT 006 360

Counselor's Handbook. I, Counselor's Interviewing Guides in Individual Appraisal. II, Counselee Appraisal Patterns Related to Fields of Work.

Bureau of Employment Security (Dept. of Labor), Washington, D.C.
Pub Date 67
Note-528p.
Available from-Superintendent of Documents, U.S. Government Printing Office, Washington, D.c. 20402 ($3.00)
EDRS Price MF-$2.00 HC-$26.50
Descriptors-Academic Achievement, Aptitude, Attitudes, Educational Background, *Individual Characteristics, Occupational Choice, *Occupational Clusters, *Occupational Guidance, *Occupational Information, *Occupations, Vocational Interests

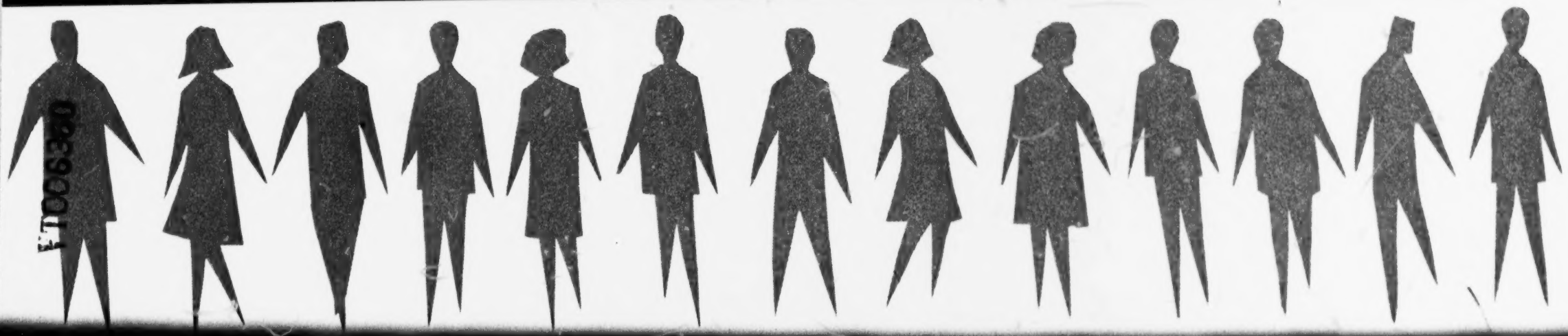
Part I includes guides for appraising individual characteristics such as interests, temperament, educational development, and aptitudes, to help the counselee learn about himself. Part II includes guidelines for appraising individual characteristics as they relate to the 18 fields of work (occupational clusters) which help the counselee learn about the world of work. Some of the occupational clusters are: (1) engineering and related, (2) clerical, (3) service, (4) mechanical and electrical, and (5) graphic arts. Comparable information in capsule form is given in the "Counselor's Desk Aid" (VT006 359), which also includes sample forms for use with individual counselees. The Branch of Counseling and Testing Services developed the "Counselor's Handbook" and the "Counselor's Desk Aid" for the use of employment counselors in state employment offices, but it should also be useful to vocational counselors in other settings such as schools and rehabilitation agencies. (CH)

ED023851

COUNSELOR'S HANDBOOK

Counselor's Interviewing Guides In Individual Appraisal and Counselee Appraisal Patterns Related To Fields Of Work

U.S. DEPARTMENT OF LABOR · W. Willard Wirtz, Secretary : MANPOWER ADMINISTRATION Bureau of Employment Security



ED023851

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

COUNSELOR'S HANDBOOK

I, COUNSELOR'S INTERVIEWING GUIDES IN INDIVIDUAL APPRAISAL;

II, COUNSELEE APPRIASAL PATTERNS RELATED TO FIELDS OF WORK.

UNITED STATES DEPARTMENT OF LABOR
W. Willard Wirtz, Secretary

BUREAU OF EMPLOYMENT SECURITY
Robert C. Goodwin, Administrator

U.S. EMPLOYMENT SERVICE
Frank H. Cassell, Director

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C., 20402 - Price $3

I COUNSELOR'S INTERVIEWING GUIDES IN INDIVIDUAL APPRAISAL

Bipolar Interests

Temperaments

Educational Development

Aptitude Information Resources

Data, People, Things Orientation

Leisure Pursuits

Values, Motivations

↓

COUNSELEE APPRAISAL PATTERNS

II COUNSELEE APPRAISAL PATTERNS RELATED TO FIELDS OF WORK

Public Service

The Sciences

Engineering and Related

Business Relations

Managerial

The Arts

Clerical

Public Contact and Selling

Service

Outdoor

Processing

Machine

Bench

Structural

Mechanical and Electrical

Graphic Arts

Mining

Elemental

PREFACE

This Counselor's Handbook is designed primarily for the use of employment counselors in State employment local offices. However, it should be useful to vocational counselors in other settings, such as schools and rehabilitation agencies.

The Handbook consists of two parts. Part I is chiefly an aid to helping the counselee to learn about himself. Part II is chiefly an aid to help the counselee to learn about the world of work. Used together, the two parts help the counselee to understand himself in relation to the world of work. The goals of this process are improved employability, more realistic and satisfying vocational choices, and improved vocational adjustment.

This Handbook was developed in the Branch of Counseling and Testing Services of the United States Employment Service by Jewell Boling, under the general direction of Norman E. McGough, Chief of the Branch of Counseling and Testing Services. Grateful acknowledgement is made to various persons in the State, regional, and national offices who have contributed much to the form and content of the Handbook by their suggestions and comment.

TABLE OF CONTENTS

	Page
INTRODUCTORY MATERIAL	
Nature of this Handbook	ix
Arrangement of Material	xi
Methodology	xiii
PART I--COUNSELOR'S INTERVIEWING GUIDES IN INDIVIDUAL APPRAISAL	
Introduction.	2
Counselor's Interviewing Guide for Exploring Bipolar Interests.	3
Counselor's Interviewing Guide for Exploring Temperaments	21
Counselor's Interviewing Guide for Appraising Educational Development	53
Counselor's Guide to the Use of Aptitude Information Resources.	65
Counselor's Guide to the Use of Data, People, Things Concepts in Individual Appraisal	187
PART II--COUNSELEE APPRAISAL PATTERNS RELATED TO FIELDS OF WORK	
Introduction.	214
Public Service.	225
Education.	228
Library, Archival, and Museum Work	236
Judicial Service and Legal	238
Religion and Theology.	240
Guidance and Social Work	242
Home Economics and Dietetics	244
Protecting, Public Service	246
Physicians and Related	254
Nursing	256
Medical Technicians and Assistants	258
Pharmacy	260
Mortician Service.	262

	Page
The Sciences	264
Mathematics and Logical Systems	268
Behavioral Science (Psychology, Sociology, etc.)	270
Life Science (Biological, Agricultural, Health)	272
Earth and Atmospheric Science (Geology, Meteorology, Oceanography, etc.)	274
Astronomy and Space Science	276
Physical Science (Physics, Chemistry, etc.)	278
Life Science Technicians	280
Physical Science Technicians	282
Engineering and Related	283
Industrial Engineering	288
Structural Engineering	289
Agricultural Engineering	290
Mechanical Engineering	291
Aeronautical and Aerospace Engineering	292
Chemical, Metallurgical, and Ceramic Engineering	293
Nuclear Engineering	294
Electrical and Electronic Engineering	296
Mining and Petroleum Engineering	298
Engineering Technicians	300
Drafting	302
Surveying, Mapping and Landscape Drafting	304
Air Flight (Piloting, Control Tower Operating and Related)	306
Audio and Video Transmitting and Receiving	308
Technical Photography	310
Business Relations	313
Accounting Work	316
Mathematical Analysis	318
Purchase and Sales	320
Advertising and Public Relations	322
Market and Motivational Research	324
Traffic Management	326
Personnel Management	328
Managerial	330
Managerial	332

	Page
The Arts	335
Artistic Work, Two-Dimensional	340
Shaping (Sculpture) and Kinetic Art	342
Artistic Arranging	344
Architecture and Landscaping	346
Artistic Photography	348
Musical Directing	351
Musical Composing	351
Musical Work, Vocal	351
Musical Work, Instrumental	351
Creative Writing	358
Copy Writing	360
Journalistic Writing (Editing and Reporting, Press, TV, Radio)	362
Translating and Interpreting	364
Technical Writing	366
Public Speaking (Lecturing, TV, and Radio Announcing)	370
Dramatic Performing (Acting)	372
Models and Stand-ins	376
Rhythmic Performing (Dancing)	378
Sports and Athletic Performing	380
Astrology and Soothsaying	382
Entertainment Work, Variety	384
Entertainment Work, Promotional and Display	386
Clerical	387
Secretarial and Stenographic	390
Typing	392
Correspondence and Copy Editing	394
Personnel Work (Clerical)	396
Filing and Cataloging	398
Computing	399
Bookkeeping and Related	400
Paying and Receiving	402
Production Record Work	403
Clerical Machine Operating	404
Stockkeeping	405
Scheduling	406
Coding and Decoding	408
Underwriting	410
Information and Message Distribution	412
Duplicating Machine Operating	414

	Page
Public Contact	415
General Public Contact Work	418
Customer Service Work	419
Automobile Serving Activities	420
Miscellaneous Public Contact Work	421
Selling	422
Service	425
Food Preparation and Serving	428
Cooking	430
Barbering	431
Cosmetology	432
Health Care Services	434
Child Care	436
Hospitality and Escorting Services	437
Lodging Services, n.e.c.	438
Customer Serving, n.e.c.	440
Building Services, n.e.c.	442
Primary Outdoor	447
Farming	450
Fishing (Includes Hunting and Trapping Aquatic Animals)	452
Navigation	454
Marine Life Cultivation	456
Forest Conservation	458
Logging and Related	460
Hunting and Trapping (Forest Animals)	462
Processing Work	468
Processing Crafts	472
Processing - Tending	474
Processing - Feeding-Offbearing and Handling	475
Machine Work	476
Machining	480
Production Machine Operating, n.e.c.	482
Heavy Vehicle Operating	485
Vehicle Driving	486

	Page
Bench Work	488
Bench Craftsmen	492
Bench Work, Production Assembling and Related	494
Bench Inspecting and Related	496
Structural	497
Structural Craftsmen	500
Structural Work, Coordinative	502
Mechanical and Electrical Work	505
Mechanics	508
Electrical Work	510
Graphic Arts	512
Graphic Arts, n.e.c.	514
Mining	516
Mining, n.e.c.	518
Elemental	521
Elemental	522

INTRODUCTION

This HANDBOOK is a counseling tool designed for the use of the skilled counselor who is qualified by training and practice to deal with the whole individual in relation to his employment problems. It is intended to implement a current concept of counseling as provided to the State employment service agencies by the Bureau of Employment Security. In this view of counseling, the importance is stressed of taking into account the individual's traits, values, motivations, interests, and aspirations. Counseling is seen as a process which engages the counselee in self-awareness and learning that can lead to increased motivation and self-direction. The counselee is viewed as having the capacity to grow, to change, and to make meaningful decisions. Work represents for him a meaningful expression of his self-concept and values. The counselor assists him to review, evaluate, and relate his present and potential capabilities to the current and prospective occupational world, so that he may find his proper role in the occupational structure.

In appraising the counselee, the counselor must be able to obtain sufficient clues from the counselee to provide a sound basis for his inferences about him. More than this, the counselee may need to acquire new levels of insight and self-knowledge. These processes are possible only as words or speech bring self-knowledge to the conscious awareness of the counselee. To aid the counselee, the counselor must share the counselee's idiom of thought and language so that communication takes place.

Counselors have long felt the need for an aid which would give them adequate coverage and organization of the types of information which they secure from and impart to counselees. Their requirements in terms of such a "missing tool" have been basic to the shaping of the content of this HANDBOOK. The interviewing guides provide resource information designed to help the counselor sharpen his communication skills. As tools of communication, the guides relate to the kinds of experiences that are visible and audible in the everyday life of people and they employ the directly rational and literary as tools.

As a tool to serve learning and developmental ends, the HANDBOOK is chiefly concerned with a different order of data from that which is emphasized in the many personnel evaluation tools which stress measurement. This HANDBOOK is not mainly a vehicle to purvey data obtained from experimental situations, although it draws upon such informational sources when they are useful for its purposes.

To clarify the distinction intended, a conceptualization from one school of life science can be borrowed and the data dealt with in the counseling process modeled accordingly. In this view, data consists of two classes: (1) inauthentic phenomena and (2) authentic phenomena. This HANDBOOK deals chiefly with the second type, authentic phenomena.

These two types of data may be delineated as follows:

1. Inauthentic phenomena are those types of data which do not have, and cannot have, personal meaning for the counselee. They are scientific constructs, e. g., test results, theoretical systems of one sort or another, based on experimental findings, usually through a methodology which involves identifying and verifying causal relationships by statistical procedures. This type of data can only be described and communicated about in terms of a specialized technical idiom. Exploration in regard to such phenomena relating to a counselee must be interpreted to him rather than arrived at with him as a natural outcome of his self-examination and exploration of events and values which have reality to him.

2. Authentic phenomena are those which are perceptible to the counselee. Their meaning is open to his consciousness, hence capable of educational, socialization, and developmental influence upon him. His apperception of authentic phenomena in the counseling process depends upon speech and conversation which are in the literary, not the technical, idiom. The literary idiom has its rootage in the reality of everyday life; it refers to the reality which all people share and is in fact the only means by which people can know each other. It is also the only means by which people know themselves. This very important characteristic of language is well caught in the saying that men must talk about themselves until they know themselves. Through speech the counselee can define himself to himself, reflect about himself, come to a sense of self-identity -- know who he is.

HANDBOOK ARRANGEMENT

PART I

Part I of the HANDBOOK is comprised of the following individual Guides which emphasize the process of helping the counselee to learn about himself:

Counselor's Interviewing Guide for Exploring Bipolar Interests

Counselor's Interviewing Guide for Exploring Temperaments

Counselor's Interviewing Guide for Appraising Educational Development

Counselor's Guide to the Use of Aptitude Information Resources

Counselor's Guide to the Use of Data, People, Things (DPT) Concepts in Individual Appraisal

Each individual Guide is accompanied by guidelines which indicate the nature and use of the particular Guide in general terms.

PART II

Part II of the HANDBOOK consists of one Guide,

Counselor's Guide for Relating Counselee Appraisal Patterns to Fields of Work.

This Guide gives emphasis to helping a counselee to learn about the world of work and relating what he has learned about himself to possible occupational objectives.

Part II of the HANDBOOK organizes the world of work for the first step in vocational choice according to eighteen Basic Vocational Directions.

The basic vocational directions are each the subject of a general field description which covers the type of activity and gives some broad generalizations about the workers in it.

Each basic vocational direction is subdivided into "career fields," i.e., fields of work viewed as a unit which comprises entry, intermediate, and journeyman levels of occupations.

Each specific career field treatment comprises the following:

1. Definition of the general nature of the kind of work.

2. Lists of Dictionary of Occupational Titles Occupational Groups Arrangements which may be explored to locate individual occupations.

3. Lists of Dictionary of Occupational Titles Occupational Groups Arrangements which may be explored to obtain leads on related career possibilities as alternatives to those listed in (2).

4. Information on the kinds of training generally associated with the field, in terms of high school or vocational courses required or useful in indicating counselee's qualifications for the work, and in addition, for the fields in which applicable, lists of college majors, specializations, and degrees.

5. Leisure pursuits (such as hobbies, spectator habits, volunteer activities, armed services experience, part-time work, etc.) which are closely associated with the field, either in terms of the activities engaged in or because the leisure pursuits have been found in studies, surveys, etc., to be favored by such workers.

6. Pertinent information (special requirements, cultural and sociological data). This includes such items as knowledges, abilities, and aptitudes which are useful, and cultural and sociological factors such as life style, values, stresses, and rewards associated with the work.

7. Illustrative temperament roles and illustrative interest involvements associated with the field. These are in the form of statements which extract certain situations from the field of work on an anecdotal basis. The counselor and counselee can be aided by them to see the continuity of work behavior with behavior in school, leisure, social, and other situations. By showing the counselee what kinds of work situations require the same adjustments or exploring with him how particular work situations fulfill the same needs that he has been thinking about in relation to himself, he can be aided to visualize himself in employment roles not yet known to him, to picture work situations in which he has never been and vicariously evaluate his reactions to them.

THE DESK AID

The HANDBOOK'S companion tool is a DESK AID which presents in capsule form the information on the Eighteen Basic Vocational Directions described in the HANDBOOK. It also contains checklists and worksheets that can be reproduced for the counselor's use.

RESEARCH METHODOLOGY AND RATIONALE

As stated, these Counselor's Guides support a departure from the traditional approach of many tools that counselors use in individual appraisal and occupational exploration. This departure, of necessity, is supported by a degree of innovation in research methodology and rationale. The research rationale in its formulation has been influenced by several factors:

(1) New thinking which has developed out of study into ways of developing employability in people;

(2) Recognition that satisfactory vocational choice and vocational adjustment of the person involves consideration of his self-concept and values and that these relate to feeling or affective components, not cognitive components alone; and

(3) The realization that counseling is more than an appraisal or evaluating process -- in its essence, it is a developmental experience for the counselee; hence, "learning-insight" takes priority over "status quo-measuring."

Many voices in the counseling discipline have been calling for new models of occupational life which emphasize its psycho-social and cultural aspects. Various researches (much of it financed by the Office of Manpower, Automation, and Training, U. S. Department of Labor) have consisted of a combing of educational, psychological, and sociological sources to unearth material which might be the basis of a more meaningful picture of the world of work. These reports have been an important research source in the development of these Guides.

The nature of what constitutes authentic methodology and valid observation is a subject of lively debate. On the one hand are those who would deal with reality only in terms of what are considered "scientific facts." Even here, there is no agreement as to what can be accepted as valid. There are the value free, rigorously defined, quantified, reproducible data of the behavioral psychologist, whose criterion of relevance is predictability. In contrast, but still within the rubric of "scientific fact" are the data of clinicians, to whom scientific data are the case report and the field observation. In extreme contrast to the data of the behavioral psychologist are those of the sociologist who uses a "participant observer" method. This method is hardly distinguishable from that employed in the literary disciplines.

It is not surprising that as counseling becomes more involved with the "whole" individual, there is argument for going beyond the limits of current "scientific fact" to extend the search for understanding man in relation to his values and his occupational life to some of the disciplines through which he has been most deeply understood--the humanistic ones. The nature of man has been explored through a long humanistic tradition, which has come down from the dramatists of ancient Greece through the wide range of today's literary forms. The literary writer has concerned himself directly with problems of motivation and conflict and has depicted them often in the occupational context. It should not be forgotten that many investigators, ranging from P. F. Lazarsfeld, experimentalist, to Sigmund Freud, clinician, have stated that most concepts in the social sciences have actually been derived from insights already established by the literary disciplines.

The systematic investigator of occupational life who restricts himself to the narrow band of facts which have been "proven" by the rules of mathematical statistical inference tends to canonize a few specific types of data as critical for vocational decision. The picture based on such restricted data resulted in Viteles' humorous illustration that shows the librarian requiring the same qualifications as celery scrapers in a soup factory. Can vocational choice be meaningful when the entirety of an occupation is squeezed into the strict and abstract framework of a few quantifiable dimensions, ignoring the rich margins of values and life style, e.g., the work culture? As a research problem, however, how is a view of the world of work which has dimensions of values and work cultures to be built up? One method would be to conduct immense field investigations of workers in every setting. What other method is open? It can be approached by using the research tactics, not of the experimentalist, but of the literary historian.

Such a research rationale has been employed to develop the information which relates to work cultures and values in these Guides. Survey and study was made of what people in occupations have written about themselves and their fellow workers, of literary works about occupations when the authors themselves had intimate association with an occupation and wrote in depth about it, and trade, association, and professional media devoted to the interests and problems of workers in an occupation or field of work.

What does an investigator look for in such literature to derive indications of the values and work culture? He looks for work values that workers get excited about, which divide them into different camps, that they take stands on, complain about, are loyal to, are proud of and ashamed of, hold as a matter of work ethics, acquire a sense of prestige from, give as their reason for getting out of the work, or tell the young about to attract them into it. These are the kinds of things which build up to give the investigator a look at the occupation from the inside. He must not be misled by random expressions. It is only those values which the members of the occupation as a group tend to become doctrinaire about that he dares to consider as solidly reflecting deeply established values.

On the basis of criteria such as these, there are included in the Guides, not lists of facts, but selected facts which highlight the flavor and atmosphere of an occupational endeavor. To intensify this, descriptions rely on the same vocabulary which the practitioners in the field habitually use in talking about it. In this way, each occupational field is described in the language characteristic of its work culture.

The Counselor's Guides are tools shaped to serve the ends of counseling as a broadly conceived discipline which is faced with the task of dealing with irrevocably subjective elements such as the values of the counselee, a reality that must be taken into account if genuinely authentic choice is to be made by the counselee in terms of his own view of the world and its personal meaning to him.

The commitment of counseling to the task of serving the "whole" individual means that it must function in full cognizance of the opposing halves of the "two cultures," in the light of the range of great thought legacies in the understanding of individual man which might be symbolized on the one hand by Alfred Binet and on the other by William Shakespeare. Only on the basis of a sense of the relatedness of all inquiry and the temperament to utilize scientific, artistic, and humanistic resources can the counselor foster personalities who are adequately functioning members of their society and productive members of the work force which keeps society stable. A research rationale and methodology geared to this point of view can incorporate not only the insights but something of the spirit of the humanistic disciplines.

PART I

THE INTERVIEWING GUIDES

These Guides suggest interviewing approaches in the counseling process. All relationships indicated in the materials are based on rational connections. The Guides are geared to a concept of the individual which sees him as having the capacity to engage in honest self-examination for his benefit. They ask no questions that the counselee cannot guess the reason for or that require from the counselor an interpretation to the counselee of the meaning of his responses.

The premise upon which these Guides are based is different from that of many appraisal aids which measure personal qualities for predictive ends. The difference should be clearly understood. The approach in instruments of the predictive type assumes that success can be predicted for an individual on the basis of his traits shared in common with the successful members of an occupation; hence, occupational choice should follow as a logical consequence of the person's resemblance to the successful workers in the occupation. Such a formulation is not suitable and valid for all sociological circumstances.

For example, when the objective of appraisal relates to the developmental needs of people to increase their employability, the likening of their interests or other traits to those of successful workers in that occupation, as a basis for helping them choose a type of occupation, is a non sequitur.

Another difficulty is that the self-knowledge which a counselee acquires as a result of such approaches is not the kind that he acquires out of insight into himself and his own feelings and view of the world. It is rather information imparted to him by the counselor on the basis of authority, which he must accept on faith. He makes his occupational choice not as an affirmation of his own identity, feelings, and self-concept, but because it is the expedient thing to do, based on the probability of success as derived from statistical findings that he resembles certain occupational populations of people. The "self-knowledge" which he makes use of to arrive at occupational choice is essentially an artifact rather than a deep and perhaps undeniable motivation deriving from his feelings toward the work content itself, i.e., the kinds of things he would do in the occupation and the kinds of ideas which would engage his attention.

These Guides, as counseling aids, are designed for the purpose of helping a counselee relate himself to occupational content and to assist him to be his own artisan of his personal knowledge about himself.

COUNSELOR'S INTERVIEWING GUIDE TO

EXPLORING BIPOLAR INTERESTS

Table of Contents

Background 6
Approach to Interests in This Guide. 7
Arrangement of Material in the Guide 8
Actual Use of the Guide. 8
Addendum -- Background Development of These Interest Concepts. 9
The Bipolar Interest Concepts. 10

COUNSELOR'S INTERVIEWING GUIDE TO EXPLORING BIPOLAR INTERESTS

"An interest is a tendency to become absorbed in an experience and to continue it, while an aversion is a tendency to turn away from it to something else," says Walter V. Bingham.

In this Guide, the following bipolar interest concepts (plus Nature and Outdoor Life) are defined and illustrated by life-experience situations:

Things and Objects
Business Contact
Routine, Concrete Organized
Social Welfare
Prestige

People and Communication of Ideas
Scientific
Abstract, Creative
Working with Machines, Processes, Techniques
Tangible, Productive Satisfaction

Nature and Outdoor Life

BACKGROUND

Interests in relation to vocational choice and adjustment have been studied for many years, particularly by Strong and Kuder. The Employment Service has long recognized the importance of getting an adequate picture of the applicant's occupational interests for various kinds of work and work situations. The primary source of information has been the interview. Frequently, use has been made of other methods and tools for obtaining indications of interest, such as the Kuder Preference Record and the Employment Service's own Interest Check List.

Counselors explore both stated and inventoried interests. Stated interests are simply assertions by a counselee that he likes an activity, e.g., machining, dramatics, or truck driving. Stated interests can be valid or invalid. The counselee may not know enough about his stated preference to be really sure or he may state the interest because he thinks it will enable him to get a job.

Inventoried interests are of different types. The Strong and Kuder, for example, depend primarily on statistical findings. A different approach, usually referred to as "logical," employs a technique which begins with defining a universe of situations and selecting items randomly from that universe. Theoretically, this approach parallels the construction of achievement tests.

The Strong type of inventory relies entirely on test data to define what the members of an occupation are like. Expectation of success in an occupation derives from the testee's similarity of interests to those of successful members of the occupation. The items contained in the test are not required to be logically or psychologically interpretable.

One example of the logical type of interest inventory is the interest checklist. Such a list abstracts sample tasks from the entire world of work and gives the individual the opportunity to express his preferences through his selection of the tasks. This approach assumes that exposing the individual to task

statements out of their specific occupational contexts will reduce the unreliable effects produced by notions about the prestige or high salaries associated with an occupation, or simple misunderstanding of what a job really involves. The assumption is made in this type of inventory that if a counselee's understanding of a task is such that it appeals to him, jobs involving similar tasks will also appeal to him. Little or no insight into the psychosocial circumstances of the occupation is provided.

A reverse view considers the above approach to be too narrowly objective and holds that activities such as job tasks become meaningful only as a result of work experience. It follows in that view that the person who has not been exposed to work experiences should have his interests explored through the medium of activities near to his life experiences so that he can imagine and visualize concretely what the test items mean.

The checklist type of interest inventory does not relate to interests which are general in application. The generalized interest approach is exemplified by the Kuder, among others. In these inventories there is the expectation that groups of items will be associated with each other and relate to a generalized area of interest. This general interest may manifest itself widely in leisure-time pursuits as well as occupational inclinations. Generalized interest concepts are identified with names such as Scientific, Social Service, Linguistic, Clerical, Mechanical, Literary, Computational, and Technical. The item content of inventories which relate to generalized interests concepts will contain task items but also more general items related to nonwork activities, types of personalities preferred, personal characteristics, reading preferences, etc.

The investigations which produce such interest inventories begin with preparation of a comprehensive set of items which initially are formulations based upon the expert judgments of the investigator. Tryout experience and factor analysis of consequent data will result in isolating the underlying dimensions which can be considered definable factors, susceptible to naming.

More recent factor studies by William C. Cottle of the Kuder, Strong, and some other inventories have suggested that positive preferences are often associated with a dislike or rejection of a contrary type of activity. As an example, it is frequently true that persons who like working with people do not like working with things, and vice versa. However, the fact that such interest concepts are placed in opposition to each other does not imply that they are necessarily contradictory. All it means is that by and large people tend to prefer the interest represented by one over the other.

APPROACH TO INTERESTS IN THIS GUIDE

The approach to counselee interest identification in the system presented here is two-fold:

1. The Interest Guide itself is of use in basic appraisal and tries to get at the preferences of counselees by means of generalized interest concepts - Cottle's bipolar factors. Definition of these factors is achieved through a sampling of interest-related activities, i.e., life experience situations, considerably broader than statements reflecting job tasks

2. In Part II of this Handbook, the Field of Work Guides, situations are described which

illustrate interest involvements associated with a work field. Leisure-time pursuits which may be specifically related to a field of work are also listed and may contribute clues, or reinforce other evidences of, interests.

The particular approach to interests investigation inaugurated in this Guide is not strictly described as either stated or inventoried. The Guide must be viewed as a facility for a written interview rather than a scored test. At the same time, it may be used conversationally in the patterned interview sense. In this case, the counselee is involved in no paper and pencil operations at all.

The essential purpose of the Guide is to help the counselee expand his awareness of the array of pursuits about which he may explore his reactions and from which he may reason about his feelings in relation to untried work experiences. The Guide does not emphasize fact-finding and inventorying. Because of this, the Guide designates interests as surveyed which implies viewing with a scrutinizing eye rather than the listing and assessing which are implicit in the term inventory.

The Guide is not the kind of interests investigation instrument which is empirically scored and expected to yield validities related to success in occupations because the interests are found to be characteristic of the workers who populate the occupation. That type of formulation is not suitable and valid for all sociological circumstances. For instance, when the objective of appraisal relates to the developmental needs of people in order to increase their employability, the likening of their interests to those of successful workers in that occupation is a non sequitur. Their needs may be more effectively met by relating their interests directly to the interest involvements which characterize the content of the particular kind of work.

ARRANGEMENT OF MATERIAL IN THE GUIDE

The interests are named and defined. To represent the interest concepts more concretely in terms of counselee information, a number of situations expressing life experiences (school, play, casual work, family experiences, and hobbies) cumulatively illustrate the interests.

The selected life experience situations are, of course, not exhaustive. They cannot be considered, individually, to definitely establish an interest trend. Each individual life experience situation can contribute weight to one polarity of the opposing interest concepts; from this an interpretation can be made as dominant trends or patterns emerge.

ACTUAL USE OF THE GUIDE

As the Guide is not a test, there are no facilities for scoring. It cannot be used mechanically. It is designed to serve the needs of the professional counselor who is competent to make judgmental evaluations of appraisal information.

Worksheet I, 511.3, Counselee Appraisal Pattern, provides a bipolar block on which the counselee's inclination or preference for one side over the other can be recorded. A block is also provided for the special interest concept, Nature and Outdoor Life.

The statements on leisure pursuits related to fields of work in Part II of the Handbook can aid the counselee in reality testing of his interests by suggesting ways in

which he may have already reacted, pro and con, to the kind of activity, cultural atmosphere, or set of attitudes and values associated with the work field.

Patterns which are derived from exploration with the counselee of his life experiences can be related to the patterns of illustrative interests involvements associated with the field of work in Section II of the Handbook.

This method is intended to reinforce judgments and increase the likelihood that reliable evaluations can be made. It expands the counselee's opportunity to thoroughly explore his lines of inclination, and to follow through in visualizing work situations which might give him an opportunity to express his interests or require of him a certain kind of interest to function effectively.

ADDENDUM -- BACKGROUND DEVELOPMENT OF THESE INTEREST CONCEPTS

These are the interest concepts first isolated by Dr. William C. Cottle through his factor studies of the Kuder Preference Record, the Strong Vocational Interest Blank for Men, the Minnesota Multiphasic Personality Inventory, and the Bell Adjustment Inventory to 400 Male Veterans of World War II. The Guide includes in addition to these bipolar concepts, the interest concept of Nature and Outdoor Life.

These interest concepts have been the subject of several years of research by the United States Employment Service in connection with occupational classification. For more extended information on the researches conducted by Dr. Cottle and by the United States Employment Service in developing these interest concepts, the following may be consulted:

Cottle, W. C. A Factorial Study of the Multiphasic, Strong, Kuder, and Bell Inventories Using a Population of Adult Males. Psychometrica, 1950, 15, 25-47.

Fine, S. A. Temperament and Interest Requirements of Jobs. Personnel Administration. March-April 1957.

Mosel, J. N., Fine, S. A. and Boling, J. The Scalability of Estimated Worker Requirements. Almost all of ten interest requirements prove to have acceptable scalabilities. Journal of Applied Psychology, 1960. 44, 156-160.

THINGS AND OBJECTS

Things and objects centered preferences: Inaminate objects, mechanics, numerical and spatial qualities of things.

JOB-WORKER SITUATIONS

Folds over the previously cemented edges of leather vamps, tongues, and quarters of shoes by machine to strengthen the edges and give them a smooth, finished appearance.

Conducts research into motion of projectiles fired from guns. Studies rate of acceleration and velocity of projectile and gun.

Prepares detailed scale drawings and tracings for blueprinting from rough sketches, using drafting tools and equipment.

COUNSELEE LIFE-EXPERIENCE SITUATIONS

Working with wrenches, screw drivers, and pliers
Collecting parts from junkyard for own garage
Making adjustments to TV set
Doing lettering and sign painting
Repairing laboratory apparatus

Taking shop course in mechanics
Working in a hardware store
Reading magazines such as Popular Mechanics and Popular Electronics
Tinkering with engines and motors
Testing chemical reactions with instruments, recording results

Working with such materials as sheet metal, brick or stone
Caring for machines, keeping them oiled and cleaned
Practicing shooting on a rifle range
Winning Scout Badge in Electricity or Radio

Watching men do masonry work
Grinding own telescope lens
Taking mechanical ability tests in magazines
Visiting factories, shops, or other places where things are being made
Reading about ballistics
Learning the uses of different kinds of building materials

Preparing an exhibit for the Science Fair, demonstrating a principle in physics
Looking at TV programs illustrating manufacturing processes
Judging speed and distance of moving objects
Making an electric generator or spark coil
Taking apart and repairing radio set

Keeping baseball scores, bridge scores, and the like
Cleaning fish and poultry
Working out mathematical puzzles
Canning vegetables and fruits
Driving an automobile or truck

Weaving seats
Mending clothes
Taking courses in arithmetic and geometry
Learning to draw or read blueprints
Inventorying school supplies

Learning ceramics and making ashtrays or other objects
Weaving rugs or making hooked rugs
Taking a course in leather tooling
Piecing scraps to make a quilt
Making measured drawings, using a compass
Cutting meat

PEOPLE AND THE COMMUNICATION OF IDEAS

People and ideas centered preferences: People and animated objects, linguistic activities - verbalization, communication of ideas. The concept "people" carries no implication one way or another as to direct contact with people. People may be contacted, but the interest may manifest itself by writing about people, portraying roles or reporting events about them, in oratory, social planning, or in dealing with animals, when the animal is regarded in terms of his own individuality and not as in grading animals for sale or as an object for scientific study, as would be the case with a ZOOLOGIST.

JOB-WORKER SITUATIONS

Plays parts requiring deftness of make-up and impersonation of such characters as old person or garrulous servant.

Writes news coverage of foreign events, utilizing knowledge of political and military personalities native to the country of which he writes.

Trains horses for running or trotting races, following plans adapted to the peculiarities of each horse, to condition them for competitive racing.

COUNSELEE LIFE-EXPERIENCE SITUATIONS

Preparing newspaper or TV publicity for Club
Studying the art and history of heraldry
Writing poetry, stories, or songs
Interviewing persons to get their opinions on current events
Being a member of a debating team

Raising pets--dogs, cats, birds, etc.
Preparing exhibits for art bazaar
Criticizing movies or plays
Visiting art gallaries
Decorating a cake

Writing articles on sports, politics, etc.
Taking a course in animation cartooning
Landscaping the home grounds
Attending public hearings, criminal, or civil trials
Making up own comic strip

Classifying books for a library
Listening to book discussion forums on TV or radio
Reading the book, theater, or music sections of the Sunday paper
Collecting information to compile a club report
Taking history and English courses

Participating in school musicals
Taking social studies courses
Painting and decorating your room
Illustrating a yearbook
Participating in club planning to promote drive for needed school facility

Making up a comic strip
Winning money in a box-top ad contest
Writing to friends describing your activities
Being a reporter on the school paper
Seeing the current productions on Broadway

Doing cryptograms and other word puzzles
Listening to Meet the Press on radio or TV
Training dogs to hunt birds and forest animals
Going to concerts
Telling bedtime stories

Telling fortunes, reading tea leaves, palms, etc.
Belonging to a bird watchers' club
Entertaining at parties with magic and tricks
Performing a skit at a party or meeting
Taking photographs of human interest for contest

BUSINESS CONTACT

Business contact centered preferences: Interviewing, selling, public appearances, business surveys and advertising, information dispensing, supervising workers and maintaining harmony among them, arranging details of meetings, making appointments, taking commercial and business administration courses.

JOB-WORKER SITUATIONS

Solicits customers, frequently outside the store, to demonstrate and sell merchandise.

Manages various functions of labor unions, such as handling relations of union with public, press, and employers, promoting membership, arranging details of meetings, hiring halls, and obtaining speakers.

Obtains information regarding topics of public interest, radio programs, and various products for sale, by interviewing housewives and other individuals.

COUNSELEE LIFE-EXPERIENCE SITUATIONS

Selling Christmas cards, tickets for school play, or soliciting donations for Red Cross drive
Sharing homework information with fellow students
Waiting on tables to earn spending money
Calling people on the telephone

Being an officer or committee worker in a club, school group, or Sunday School class
Being a traffic director
Buying articles at auction and reselling
Entering into discussions with others
Being a member of a debating team

Working at church bazaar or carnival
Conducting party games
Recruiting club members
Selling advertisements for school paper

Interviewing persons to get their opinions about school athletics, vocational departments, etc.
Coaching a team of some kind
Attending or being delegate to a convention
Having a Saturday or holiday job in a store or theater
Manning a livestock or other exhibit at county fair

Having a paper route and soliciting subscriptions
Being business manager of school publications
Organizing a social function requiring funds
Giving people information, such as street directions, best stores to shop, etc.
Being host or hostess at club social affair

Selling tickets or soliciting donations by house-to-house canvassing
Being a complaint clerk in a department store
Being chairman of Public Relations Committee of a club
Being active in social group managing, e.g., outings, dances, etc.
Collecting contributions in a club fund drive

Being secretary of a club, church, or social group
Meeting new people
Being a church or school event usher
Guiding people through a school exhibit
Demonstrating merchandise in a store
Taking business administration courses

Obtaining a speaker for a club
Acting as master-of-ceremonies at a club affair
Making appointments over telephone
Persuading people to buy something
Seeking out prospects as a member of a nominating committee

SCIENTIFIC

Scientific centered preferences: scientific courses or hobbies; liking for finding out things on own initiative; curiosity about natural phenomena and what causes them; spare-time scientific reading and general awareness of scientific advances.

JOB-WORKER SITUATIONS

Discovers general facts and interprets quantitative information by application of statistical methods to a mass of related individual observations.

Develops tests and experiments to measure mental characteristics of human beings, standardizing by extensive trial application.

Illustrates scientific books, makes exhibits, and prepares drawings for medical research from the microscopic structure of animal or plant tissue.

COUNSELEE LIFE-EXPERIENCE SITUATIONS

Learning about dietary values of food
Taking courses in biology or agronomy
Attending scientific lectures
Keeping a notebook on a research project
Experimenting with a chemical set

Watching Mr. Wizard give a science lesson on TV
Carrying out nutritional studies with mice or other experimental animals
Taking courses in astronomy or geology
Having a small biology lab at home
Belonging to a model rocket society

Using statistics to analyze a problem in social science
Observing migrating birds and bird flyways
Playing chess or other games of problem solving
Building a cloud chamber to detect nuclear events
Using maps, globes, and atlases to demonstrate a point in geography

Studying specimens under a microscope
Experimenting with building a solar energy furnace
Belonging to an amateur scientific group that engages in artificial satellite tracking
Taking a course in logic
Winning a prize for a science project

Studying the origin of language and developing a theory about it
Engaging in closely reasoned arguments
Reading science magazines and textbooks outside course requirements
Figuring out possible solutions to natural phenomena which you find puzzling

Exploring to collect fossils, fauna, flora
Making systematic observations of such things as meteors, ant hills, rocks
Winning in a Westinghouse science talent search
Building a homemade "atom smasher"
Sifting evidence to solve problems

Experimenting with best methods to grow plants
Studying the stars at night to identify the constellations
Making a culture of an infectious virus
Experimenting with animals in a maze
Making practical applications of the laws of science

Reading about developments in atomic power, jet propulsion, automation
Studying solutions to social and psychological problems
Taking a course in optics, grinding own telescope lens
Computing eclipses or other predictable natural phenomena

ROUTINE, CONCRETE ORGANIZED

Preference for activities which are organized and routine and which deal with the concrete. This interest is associated with a liking for detail work, for the ordinary, usual, and customary, and for performing within a framework of established procedure.

JOB-WORKER SITUATIONS

Assists another worker by keeping him supplied with materials, tools, and supplies, or performing routine machine operations such as feeding or unloading machine.

Types on forms such information as customer's name and address, serial number of account, terms, amount of payments due, and amount of overdue payments.

Picks by hand, usually on piecework basis, cultivated berries. Transfers picked berries from buckets to wooden baskets.

COUNSELEE LIFE-EXPERIENCE SITUATIONS

Having an assembly line job
Arranging things numerically
Arranging things alphabetically
Doing the same work until finished
Having a holiday job waiting on customers in a five- and ten-cent store
Being a short-order cook
Giving manicures all day

Concentrating your attention on a machine to see that it is running properly
Having established rules to work by
Sorting things according to size and color
Having a spare-time job addressing envelopes
Asking people questions to fill out a census or other type of questionnaire
Canning vegetables and fruit
Working on a "piece work" basis
Checking out people in a cafeteria or grocery store
Keeping things systematic and orderly
Having a job which can be done more or less automatically, which doesn't require thinking all the time

Knitting to pass away the time
Doing the detail work on a project
Checking lists of names for accuracy
Doing the family ironing
Filing records according to a coding system
Putting together a jig-saw puzzle
Setting tables
Running automatic machinery

Having established rules to work by
Having a place for everything and keeping it there
Working at a steady pace all day
Using an adding machine all day
Proofreading another's work
Stenciling show cards

Finding mistakes in arithmetic problems
Having a routine job where you always know what is expected of you
Working according to prescribed methods
Taking courses which have a practical application, such as commercial course, blueprint reading, electroplating, or home economics

ABSTRACT, CREATIVE INTEREST

Preference for activities which relate to the ideational, e.g., qualitative judgments in the arts, social service, and science. The tendency is to prefer varying situations unstructured by precedent; to look for broad meanings, generalizations, abstractions; to organize elements of a situation into a unified whole; to employ universal values or theory to arrive at new solutions to problems or to achieve ideal representations.

JOB-WORKER SITUATIONS

Conducts research into phases of physical phenomena and develops hypotheses as to the origin and nature of the universe.

Paints still life, abstract designs, and other compositions, harmonizing complex relationships of line, design, and mass into unified and pleasing arrangements.

Studies physical and social environment of welfare client to solve problems. Interviews client to determine nature of problem. Diagnoses problems, considering factors involved, and plans treatment.

COUNSELEE LIFE-EXPERIENCE SITUATIONS

Creating a new hairdo
Experimenting with various ingredients and flavors to work out new dishes
Decorating show windows
Originating designs to carve or paint
Designing greeting cards, programs, place cards, etc.

Listening to people with problems in order to help them arrive at solutions
Teaching gifted youngsters to paint or draw
Planning a club project to provide recreational facilities for retarded children
Participating in community project planning

Applying mathematical theory to unexplored phenomena in nature
Developing designs for Science Club projects to find answers to an unsolved problem in science
Developing a theory that is new and startling
Inventing mechanical devices
Devising mathematical puzzles
Winning cash money in a box-top original name contest

Planning social charities
Creating novel rock gardens
Designing "massed" picture arrangements
Inventing eye catching advertisements
Thinking up jokes or political cartoons
Experimenting with camera for trick photography
Inventing new dance steps

Conceiving and writing musical compositions
Imagining and writing dramatic incidents
Creating lighting effects with lights
Writing stories, poetry, or songs
Designing historic costumes

Taking courses which give great emphasis to theoretical aspects of a subject
Studying various hypotheses as to the origin of the universe
Exploring the strange, unusual, unknown
Conducting experiments to discover new scientific facts
Designing new gadgets

Social welfare centered preferences: Working with people for their presumed good as in the social welfare sense and for other activities that involve dealing with people and language in social situations. Associated with this interest is a liking for linguistic and personal contact pursuits, language and social sciences, social and cultural types of amusements.

JOB-WORKER SITUATIONS

Organizes recreational groups and endeavors to promote the development of social attitudes and adjustments among the participants.

Analyzes the students and job seekers and gives counsel in terms of personality and abilities, applying an understanding of the individual in terms of his personality adjustment.

Accompanies handicapped children on school bus to help them board or leave bus and to assist them in climbing school stairs.

COUNSELEE LIFE-EXPERIENCE SITUATIONS

Teaching handicrafts to small children
Collecting clothing, toys, etc. to give to needy families
Taking courses in social studies
Being a calisthenics instructor at a camp
Sharing homework with fellow students

Helping an infirmarian or nurse at a camp
Doing volunteer settlement work
Participating in a club program for cultural dissemination to underprivileged persons
Being a counselor at a summer camp
Belonging to a 4-H club

Gathering books for a welfare society
Teaching in Sunday School, doing practice teaching, or being a camp instructor
Taking care of sick animals
Being chairman of a fund raising drive for cancer research
Studying recreational methods

Interviewing and counseling people about personal, financial, or job problems
"Baby sitting" to earn your spending money
Participating in social charities
Getting the other's point of view and helping him solve his problem
Doing odd jobs at a rectory or sacristy

Doing volunteer church work
Participating in club activities to lessen juvenile delinquency
Organizing a petition to achieve a needed community service
Practicing first aid care on persons at home, with Scouts, etc.
Taking courses in social work

Being a volunteer firefighter
Being active in social betterment causes
Participating in a disaster relief drive
Doing volunteer Red Cross work
Taking a course in first aid and care of the sick

Assisting people when they are sick or in trouble
Raising pets--dogs, cats, birds
Sharing homework with fellow students
Helping children dress or undress
Being a volunteer aid in a hospital

NONSOCIAL, WORKING ALONE WITH MACHINES, PROCESSES, TECHNIQUES

Preference for self-centered activities that can be carried out alone in relation to machines, processes, and techniques. There is no implication of isolation from others but only that individual effort, knowledge, and self-reference predominate in relation to a definitely organized technique or process.

JOB-WORKER SITUATIONS

Operates an automatic camera to photograph the finish of horse races. Projects films on screen for study of judges and spectators whenever a close finish occurs.

Tests and adjusts the strings of a piano, so that they will conform with the accepted standards of pitch, and will sound harmoniously when played.

Fashions dental plates from impressions taken of patient's gums by DENTIST.

Sets up, adjusts, and operates light signals used in surveying by triangulation.

COUNSELEE LIFE-EXPERIENCE SITUATIONS

Taking a machine shop course in high school or trade school
Practicing markmanship
Replacing spark plugs; tightening screws and bolts
Repairing and keeping up a bicycle
Driving an automobile or truck

Raising bees, collecting and storing honey
Flying kites
Chopping down trees
Planting things and watching them grow
Repairing tractors, plows, mowing equipment, etc.

Bleaching leather
Canning vegetables and fruit
Dry cleaning own clothes
Caring for shrubbery and keeping it pruned
Building and setting a trap for rabbits or other small animals

Repairing the plumbing when it isn't working right
Studying a machine in operation to understand how it functions
Being expert with knots, ties, and splices
Making adjustments to TV set
Steering a boat, using a compass or sextant

Working with a machine having many moving parts
Soldering leaking automobile radiators
Operating a printing press to get out the school paper
Tinkering with engines and motors
Taking a course in electric wiring

Clearing brush
Testing chemical reactions with instruments, recording results
Electroplating objects with brass, copper, etc.
Developing pictures in a darkroom
Operating a saw, loom, punch press, or other machine in high school or shop course

Studying fingerprinting systems
Being a ham radio operator, winning a certificate
Taking action pictures at fastest speed
Keeping tools cleaned and in prime working condition
Tinkering with chemistry set or working in the school lab

Adjusting automobile ignition systems, generators, or storage batteries
Mixing ingredients by precise formulas
Installing and grounding a TV antenna
Maintaining precise temperature and timing conditions, in cooking and baking
Hunting duck, rabbit, or other small animals
Racing midget cars or stock cars

PRESTIGE

Prestige centered preferences: Consciousness of the reaction or esteem of others as this esteem contributes to a position of leadership. Associated with this interest is leadership, planning, association with prominent people, controlling business transactions, being in charge of administrative matters, or being a key figure in any field of activity, art, business, science, social service, or other.

JOB-WORKER SITUATIONS

Acts as agent of the United States Government in negotiating treaties, conventions, and protocols regarding international intercourse.

Conducts the public performance of an orchestra.

Teaches all grades in a rural school. Handles all administrative details and is in complete charge.

Writes feature articles on screen celebrities and motion picture producers, frequenting the haunts of the famous and successful and cultivating their acquaintance.

COUNSELEE LIFE-EXPERIENCE SITUATIONS

Being recognized in community for civic club activities
Speaking in public
Achieving celebrity status in some field -- art, politics, sports

Producing an amateur play
Being a leader in a civic organization, e.g., Scouts, Reserves, etc.
Heading a Red Cross drive
Being master of ceremonies at a school or club affair
Preparing newspaper, radio, or TV publicity for club

Raising animals for show and winning blue ribbons
Being a judge at a flower show or beauty contest
Editing a school or club paper
Directing a church choir
Being a delegate to a convention

Being a host or hostess at a club social event
Having chairmanship of a community project, such as Exhibits Section at county fair
Coaching a team of some kind
Being an authority on parliamentary procedure

Holding a class officership
Doing social group managing, e.g., outings, dances, etc.
Being an athletic team leader
Planning fraternity or sorority programs for year
Directing a school play

Officiating at a club or school event
Being in charge of the publicity for the Science Fair
Being chairman of a Public Relations Committee
Being known for your successful parties and prominent guests

TANGIBLE, PRODUCTIVE SATISFACTION

Tangible, productive work preferences: Achieving tangible results with relative unconcern for status aspirations. Involves a goal of achieving a tangible product with constant awareness of what is being made. Satisfaction derives from "turning out" or completing the product, whether it is a cake, a machine part, find cabinetwork, an electronic assembly, or a prolific vegetable garden.

JOB-WORKER SITUATIONS

Installs radios in automobiles. Completely attaches all parts; makes electrical connections; adjusts tuning. At completion of job, radio must operate properly.

Operates a machine that knits a complete full-fashioned stocking in one operation.

Prepares, stuffs, and mounts skins of birds or animals in lifelike form.

Fashions dental plates from impressions taken of patient's gums by DENTIST.

COUNSELEE LIFE-EXPERIENCE SITUATIONS

Collecting secondhand parts and building your own hi-fi rig
Building bird boxes in various designs
Doing needlework, such as embroidery, patchwork, or applique
Making dresses
Constructing doll houses
Making breads and pastries

Tooling handbags, wallets, and other leather goods
Mounting and framing pictures
Building scale models of airplanes
Building a model theater from cardboard
Stuffing birds and animals
Carving small objects for knick-knack shelves
Making puppets
Making shell jewelry
Giving permanent waves to friends
Learning the art of ceramics and making ashtrays, etc.
Building a chickenhouse, workshop, or breezeway
Remodeling cars
Making iron ornaments for home use
Making fancy signs, totem poles, and dioramas

Developing, printing, and enlarging pictures
Wallpapering a room
Making beaded bags
Baking and decorating cakes
Knitting sweaters
Grinding lens, constructing a mount, and completing a telescope
Whittling small statues

Weaving rugs and making hooked rugs
Piecing scraps to make quilts
Constructing cabinets for radio, TV, or phonograph
Taking a watch apart and putting it together again
Making a window box, garden walk, or fish pond
Constructing a flagstone terrace

Planting a truck garden, tending and harvesting it
Finishing and painting furniture
Building boats
Making pewter articles
Being a member of sewing club and making own clothes

NATURE AND OUTDOOR LIFE

Preference for being outside, under the open air and sky; for working with growing things, caring for animals, love of "the land" or "the sea."

JOB-WORKER SITUATIONS

Propagates peach trees from seeds and buds desired varieties on stalks.

Stands watch at bow of a ship for possible obstructions.

Rides or walks high ridges or trails in national forests, keeping a sharp lookout for fires.

COUNSELEE LIFE-EXPERIENCE SITUATIONS

Living away from the city
Studying wildlife
Reading magazines about outdoor life
Growing a vegetable garden
Observing weather conditions

Belonging to the Sea Scouts
Cross-breeding plants or animals
Taking natural science and agricultural courses
Having a vacation job with a harvest crew
Fishing in a bay, stream, or pond

Roaming the woods
Taking a course in celestial navigation
Sleeping in the open air
Breeding pedigreed animals for show
Raising tropical fish

Handling boats
Breeding and exhibiting poultry
Being an expert swimmer
Belonging to 4-H Club or Grange
Reading about modern farming methods

Raising and training horses
Stocking and keeping a fish pond
Learning about the different kinds of ships
Caring for trees
Going deep-sea fishing

Working with animals
Studying the skies at night to identify the constellations
Raising pets--dogs, cats, birds, etc.
Building a rock garden
Learning the wild flowers of the U. S.

Belonging to a bird watchers' club
Caring for shrubs and keeping them pruned
Studying seashore life
Landscaping the home grounds
Observing cloud formations, the Echo satellite, barometer readings and the like
Studying and collecting rocks
Planning crop rotation

COUNSELOR'S INTERVIEWING GUIDE FOR EXPLORING TEMPERAMENTS

TABLE OF CONTENTS

BACKGROUND 23
ARRANGEMENT OF MATERIAL IN THIS GUIDE. 25
ACTUAL USE OF THE GUIDE. 25

COUNSELOR'S INTERVIEWING GUIDE FOR EXPLORING TEMPERAMENTS

BACKGROUND

Temperaments analysis as an aspect of worker qualification research goes back in the USES to 1950 when USES counseling people indicated that this type of personality information was needed. Initial studies were instituted under Robert W. Gurnell and Charles E. Odell. A committee to set up researches into personality information as a factor for consideration in occupational classification was headed by Evelyn M. Murray. The work of Miss Murray's committee resulted in the identification of eleven temperament concepts. These concepts were defined in clinical terms, i.e., as they occur in people. The definition agreed upon for "temperaments" was: "Those personality qualities which remain fairly constant and reveal a person's intrinsic nature."

For the purposes of job rating, the clinical concepts of temperaments were subjected to a series of experimental studies which resulted in their reformulation not as traits in people but as types of situations in jobs requiring common adjustments in workers. These researchers and studies were reported to the American Psychological Association Convention in 1952 by S. A. Fine and J. Boling. In April 1959 the entire series of studies which culminated in the final twelve temperament factors now incorporated in the third edition of the Dictionary of Occupational Titles were reported in an article by J. Boling and S. A. Fine appearing in the Journal of Applied Psychology.

These twelve temperament concepts follow:

1. VARCH - Situations involving a variety of duties often characterized by frequent change (derived from clinical concept VERSATILITY).

2. REPSC - Situations involving repetitive or short cycle operations carried out according to set procedures or sequences (derived from clinical concept ADAPTABILITY TO ROUTINE).

3. USI - Situations involving doing things only under specific instruction, allowing little or no room for independent action or judgment in working out job problems (derived from clinical concept SUBMISSIVENESS).

4. DCP - Situations involving the direction, control, and planning of an entire activity or the activities of others (derived from clinical concept DOMINANCE).

5. DEPL - Situations involving the necessity of dealing with people in actual job duties beyond giving and receiving instructions (derived from clinical concept GREGARIOUSNESS).

6. ISOL - Situations involving working alone and apart in physical isolation from others, although activity may be integrated with that of others (derived from clinical concept ISOLATIVENESS).

7. INFLU - Situations involving influencing people in their opinions, attitudes, or judgments about ideas or things (derived from clinical concept PERSUASIVENESS).

8. PUS - Situations involving performing adequately under stress when confronted with the critical or unexpected (derived from clinical concept SELF-CONTROL).

9. SJC - Situations involving the evaluation (arriving at generalizations, judgments, or decisions) of information against sensory or judgmental criteria derived from clinical concept VALUATIVENESS).

0. MVC - Situations involving the evaluation (arriving at generalizations, judgments, or decisions) of information against measurable or verifiable criteria (derived from clinical concept OBJECTIVITY).

X. FIF - Situations involving the interpretation of feelings, ideas, or facts in terms of personal viewpoint (derived from clinical concept SUBJECTIVITY).

Y. STS - Situations involving the precise attainment of set limits, tolerances, or standards (derived from clinical concept RIGOROUSNESS).

In the early approaches to temperament analysis, the researchers stayed close to an operating frame of reference in which the significance of temperaments was evaluated chiefly in terms of how well the particular temperament concept met a criterion of being a "job demand." The rationale went something like this: Significant temperaments must be identifiable and essential in job performance. They are traits which the worker must possess in order to meet standards for successful performance on a job. The temperaments to be considered about a person must be useful in the placement process. They must be of value in determining if the applicant is a likely prospect for employment in a specific job. The Employment Service Manual, Part II, Section 2037, stated that "Personality traits are desirable or undesirable in relation to the performance of specific occupational fields."

When the twelve temperament concepts were tried out operationally in connection with the Estimates of Worker Trait Requirements for 4,000 Jobs they were treated as if they were verifiable data, almost in the sense of a test score. The applicant himself was not really a participant in the exploration of his temperaments. Any statement of his bearing on feeling or temperament required situational evidence as "proof" to be accepted or considered. Temperament information was not secured indiscriminately but was adapted to the employment needs and the job being considered for the counselee.

Temperamental evidence was considered valuable in relation to the experienced applicant because it indicated his ability to make adjustments to job requirements. Counselors could use evidence of temperaments of entry applicants to determine if they had the personal qualities which would enable them to obtain a job and hold it.

In this Guide the approach to temperament analysis in relation to the counselee departs from the rationale described above. In this view, it is not meaningful to obtain information about a counselee's personality or temperament which is segmented in relation to a particular job or even restricted to that which is demanded by occupations. "Independent variables" or traits can be separated conceptually, but such variables are artifacts. In no individual does a single trait function independently of the total pattern of his makeup.

Moreover, the counselor who functions in terms of the current concept of counseling as established in USESPL 1670 does not feel that the behavioral descriptions of occupations fully meet his needs. A current view of occupations sees them as dynamic rather than static entities. What is needed, is not data which sets up fixed job requirements but information on the personal styles, abilities, and personality characteristics which a particular occupation tolerates.

ARRANGEMENT OF MATERIAL IN THIS GUIDE

The temperament concepts contained in this Guide are presented so that their operational meaning builds up cumulatively. The concepts are defined as a quality of personality, in the affectively communicable literary sense. They are made specific to the work situation through illustrations describing the qualities as seen in workers. They are further defined through questions which might be asked of an individual to aid him in reflecting about such qualities in himself. These suggested lines of questioning appear under two headings: (1) attitude clues, (2) activity clues.

The counselor can use these questions, or make up his own, not so much for obtaining data which must be verified by situational evidence, but as the basis for conversation to help the counselee talk about himself, his habits, his problems, his aspirations, what he values, what has discouraged or motivated him, his outlook on life, the kind of person he thinks he is and wants to be. Such conversation can help him come to terms with feelings about life demands for qualities in him, as for instance, capacity for accuracy and carefulness or self-control in stressful or dangerous situations. It can aid him explore his needs in the work situation, for instance, a strong urge for self-expression, or working close to people who make big decisions, or being given specific instructions so that he knows just what is expected of him.

ACTUAL USE OF THE GUIDE

The Guide is not a test; there are no facilities for scoring. It cannot be used mechanically. It is designed to serve the needs of the professional counselor who is competent to make judgmental evaluations of appraisal information.

Worksheet I, 511.3, Counselee Appraisal Pattern, contains a section which lists brief designations of the temperaments, with boxes for a summary recording of the temperaments evidence which the counselor obtains. For each of the twelve temperaments, there are three possible determinations: (1) No evidence of or contraindication of the temperamental tendency; (2) Some evidence of the temperamental tendency; (3) Strong evidence of the temperamental tendency.

Patterns which are derived from exploration with the counselee of his attitudes and reactions that contribute to understanding of his temperamental makeup can be related to patterns of illustrative temperament roles associated with the fields of work in Part II of this Handbook. This step is intended to aid the counselee to picture work situations which he has never observed and to visualize himself in untried job roles.

In these descriptions of temperamental roles of workers, language is used to achieve what Jerome S. Bruner calls "dramatizing devices." The counselor can, to some extent, employ language as a device for providing the counselee with vicarious experience of the work roles. When this can be augmented by films, recordings, slides, books and "direct" experience of the work by tryout, the counselee is of course in a much better position to relate himself to particular kinds of work from the standpoint of his temperamental reactions to it.

1 VERSATILE (RELATED TO VARCH)

VERSATILE: Tendency to seek out situations which involve variety and change, that permit attention to be shifted from one thing to another rather than focused on the same thing for long periods, and which provide opportunity for encountering the new and unexpected. This may be thought of as a capacity for adjustment or as a disposition which

- can keep track of a number of different things
- adjusts to changes in pace of activities
- can move with ease from one task or frame of mind to another, quite different one
- likes to be where several things are going on at once
- can cope with continually changing, often conflicting circumstances

As seen in workers:

The MUSICIAN with a varied repertoire, who shifts from classic to popular if the occasion requires it

The ADVERTISING MANAGER organizing meetings, writing copy, and making speeches

The PHOTOGRAPHER equally at home in the suave atmosphere of the fashion salon and the hurly-burly of the political campaign

The FACTORY MAINTENANCE WORKER applying skills of several trades in order to keep machines, mechanical equipment, and structures in good repair

The FARMER varying his work with the seasons and the time of day, moving from task to task as he cares for animals and crops

The ESCORT who acts as a social partner in dining, drinking, dancing, attending the theater, gambling, and other social pastimes

The POLICEMAN in coping with burglaries, suicides, murders, kidnappings, calling ambulances to accident scenes, and getting victims out of smashed cars

The CLERGYMAN in his wide range of community participations, serving on boards and committees, and presiding at various ceremonies

The DENTAL ASSISTANT preparing patients for treatment, sterilizing instruments, answering the telephone, ordering supplies, processing X-rays, receiving callers, keeping accounts, and sending out bills

The SECRETARY who is unruffled while tending to a hundred and one details, making decisions, and going on errands

Persons whose attitudes and activities show evidence of this trait are presumed to find satisfaction and compatibility in job situations which involve VARCH, Variety and Change, as illustrated below:

Repairs tractors and other farm machinery and constructs and repairs barns, houses, silos, fences, bridges, and other farm structures.

Demonstrates performance techniques for active sports, group dances, or games, and explains rules.

Attitude Clues

Do you like or dislike to

Have a number of things on your mind at once?
Drop what you are doing in the middle of it, to start something new and entirely different?
Adhere to a regular routine?
Keep track of a number of different things?
Have several things going on at one time?

Keep your attention on one thing for a long time?
Do things one certain way?
Have several chores waiting for you to do?
Move about, turning from one thing to another?

Do you think you would like

A job on which things were never settled, where something new was always popping up?
Do work that kept you on your toes because something unexpected was always in the works?
A job in which you really couldn't know what to expect tomorrow or next week?
To be kept moving from place to place?
A job which involved you in strange and unforeseen situations?

Activity Clues

Have you (are you, do you)

Been responsible for an undertaking and looked after all kinds of odds and ends to get it finished up?
Not just a one-hobby person, but have so many interests you can't decide among them?
Joined several clubs or hobby groups?
Had experience where you were responsible for your own work routine to arrange as you saw fit?
Been engaged in activities with uncertain hours and something new and different always coming up?

Been excited and pleased at being faced with unfamiliar places and circumstances?
Been under pressure to meet deadlines, get one thing out of the way and start on something entirely different, and found yourself getting a kick out of the ease with which you could do it?
Tried out and learned to do more than one occupation?
Have one favorite type of TV program or don't like sticking to just one kind of program?
Gone in for several kinds or sports, or perhaps just one?

Been told that you were many-sided?
Had a hundred and one things to look after, or so it seemed to you?
Developed one favorite type of reading, or read on all kinds of subjects?
Felt you were getting into a rut?

2 ADAPTABLE TO REPETITIVE WORK (RELATED TO REPSC)

ADAPTABLE TO REPETITIVE WORK: The ability to continue the same task without diversion, to proceed with work in strict adherence to a work procedure or established pace set by machine or other worker. This may be thought of as a capacity for adjustment or as a disposition which

is able to adjust own tempo to an outside regulator

has a high tolerance for sameness

prefers to experience activity in a set order

likes to do one thing at a time

likes a regular routine, to be relatively free from intrusions or the unexpected

does not like to contend with an activity which is complicated

As seen in workers:

The ASSEMBLY LINE WORKER performing over and over again the same assembly of instrument parts

The CLERK who spends entire time operating an adding machine to add and subtract columns of figures

The AUTOMOBILE ASSEMBLY LINE WORKER placing a certain number of bolts in a certain number of seconds as a part moves by on a conveyor belt

The FACTORY OPERATOR using a single machine to produce a single item

The SHEET SEWER sewing hems of sheets all day

The POULTRY KILLER standing at a table, performing only one task, the severing of chicken heads

The STENOGRAPHER taking straight dictation only

The PRESS OPERATOR whose job consists only of observing a machine turning out thousands of uniform items

Persons whose attitudes and activities show evidence of this trait may find work satisfaction and compatibility in job situations which involve REPSC, Repetitive, Short Cycle Operations Carried Out According to Set Procedures or Sequences, as illustrated below:

Addresses envelopes, cards, advertising literature, packages, and similar items for mailing, by hand or by typewriter.

Stands or sits beside moving conveyor and picks out defective cranberries by hand, allowing sound berries to pass along conveyor into barrel.

Places lumber, one board at a time, in feed rollers of saw which cuts and boards edgeways into two or more pieces.

Attitude Clues

Do you like or dislike

Doing the same work until finished?
To run your life according to an established routine?
Leaving something you are doing unfinished and turning to something else?
To be a member of a work team?

Work which requires you to look after several different things at the same time?
Working at the same thing for a long time?
Doing one thing at a time?

A customary, set procedure?
Doing the same thing over and over again?

Do you think you would like

A job in a plant where your job was just like the job of thousands of other people?
Keeping up with other workers on an assembly line?
Typing straight copy all day?
To work and be paid on a "piece-work" basis?

Being "the man on the assembly line"?
Working at a conveyor belt, bolting parts together in a certain number of seconds as the belt moves by?
Feeding a machine, repeating what you do every couple of minutes throughout the day?
To stand all day at a machine observing it turnout thousands of uniform items?
Having a job which you can learn to do more or less automatically?

Activity Clues

Have you (are you, do you)

Worked or played on a team?
Found it annoying to leave one thing you were doing to turn to something else?
Worked in one place all day?
Done work which involved no change or variety?

Concentrated your attention on one thing for a long time?
Used your hands to do the same task all day?
Done any one kind of work steadily, which didn't give you any opportunity to move about from one thing to another?
Worked rapidly in a situation which you felt to be monotonous?

Had a part-time job doing what was called "repetitive work?"
Felt a need for variety and change in your activities?
Found it easy to keep your mind on one thing and not have your attention wander?

3 ADAPTABLE TO PERFORMING UNDER SPECIFIC INSTRUCTIONS (RELATED TO USI)

ADAPTABLE TO PERFORMING UNDER SPECIFIC INSTRUCTIONS: Inclination to submit to the decisions or acts of others, to act according to instructions of others and to perform tasks that do not necessitate planning or making decisions on own initiative. This may be thought of as a capacity for adjustment or as a disposition which

likes to please other people by conforming to their wishes

is accepting of environment as it is

adjusts to taking orders from others

is amenable to a subordinate role

can be unquestioning in attitude towards authority

is amenable to having work closely checked and inspected

is conforming to what other people think

adapts to restrictions on initiative

can assume subservient deportment

can adapt to a "cipher role"

As seen in workers

The CLEANING MAID whose work is closely supervised and minutely inspected

The PRODUCTION MACHINE OPERATOR who operates machine according to established instructions and who must call supervisor to solve any operating problems which may arise

The ADMINISTRATIVE ASSISTANT whose performance and loyalty are geared to achieving the success of supervisor rather than own

The member of the FIREFIGHTING CREW under complete discipline and obeying orders to the letter in a fire-fighting emergency

The MODEL demonstrating clothes in showroom, required to be very obliging to all kinds of commands from customers who see the model almost as a manikin rather than a human being

The SERVANT in the great house, hardly more than an object to the employers who live there

The BARBER pleasing the "fussy" customer, styling the hair exactly as customer demands it

The NURSE with unquestioning attitude towards authority and capacity for carrying out instructions exactly

Persons whose attitudes and activities show evidence of this trait may find work satisfaction and compatibility in job situations which involve Doing Things Only Under Specific Instruction, Allowing Little or No Room for Independent Judgment in Working out Job Problems, as illustrated below:

Attends to employer's personal wants, performing personal services under direction.

Types on cards information concerning newly registered guests for use of hotel front-office employees.

Assists BUFFING-MACHINE OPERATOR, AUTOMATIC by performing an array of duties.

Attitude Clues

Do you like or dislike

Carrying out the plans your friends make?
Following instructions without questioning them?
Accepting things pretty much as you find them?
Doing work which does not require you to plan and make decisions yourself?

Having clear-cut instructions so that you know exactly what is expected of you?
Deferring to others?
Having another person order you to do something?
To be respectful of authority?

Listening to other people tell you all about themselves?
Being obedient to other people?
Being told you are modest or self-effacing?
Being considered an obliging person?

Doing personal tasks for others?
Doing things for others just the way they want them done?
To subordinate your own wishes to others?
Following suggestions of others?
To have another person order you to do something?

Do you think you would like

Having a job in a HOSPITAL where both patients and the medical supervisor gave you orders throughout the day which you were expected to carry out at once?
A job as a helper to another worker?

Activity Clues

Have you (are you, do you)

Tend to follow instructions without making inquiries as to why?
Avoid "bossy" people?
Been in charge of a situation and found that people wouldn't pay much attention to you, but kept going their own way?

Been considered an obliging person by other people?
Been told by a supervisor that "your work is all cut out for you" and resented it?
Often gone to great effort to do something exactly the way another person wanted you to do it?
Had work in which you accepted tips?

Performed services which required direct physical contact with persons receiving the service?
Had work in which you had to devote yourself to pleasing others rather than yourself?
Had work in which you waited on others?

Ever been bothered by the thought that you were "only a cog in the wheel?"
Assisted people in ways such as escorting them to seats, running errands for them, delivering messages, and the like?
Been told exactly how you should go about doing a job and found it annoying?
Often found yourself in a subordinate position, "low man on the totem pole?"

4 DOMINANT (RELATED TO DCP)

DOMINANT: Ability to direct, control, or plan an entire activity or the activities of others. This may be thought of as a capacity for adjustment or as a disposition which

likes to prevail, control, be at the "helm"

wants to play a part in shaping the environment

seeks to obtain responsibility for activities which require planning, decision-making, directing

thrives on competition, and can easily assume ascendency over others

in a "pecking order" hierarchy seeks to be in top ranks

can direct others, take charge of them, give instructions, orders, commands

in a situation of work responsibility, is easily able to stay in control, to maintain work order and productivity, to be "boss"

tends toward initiative, to making his own mark, imposing his own style, making his own program

tends toward being independent and self-directing in work

when observed by others, may bring to mind personal qualities such: self-confident, aggressive, bold, assertive, competitive, adventurous, independent, tough, resourceful, forceful, prevailing, authoritative, vigorous, managing, ascendent, decisive, planful

(Note: Directing, controlling, and planning an entire activity is to be distinguished from directing, controlling, and planning activities of others in the sense that the quality of dominance in the interpersonal relationship sense may not be involved in the former.)

As seen in workers:
The PLANT MANAGER taking responsibility for important decisions
The FIREMAN SUPERVISOR directing fire crews
The EDITOR controlling editorial policy of a newspaper
The POLICEMAN able to effectively exercise authority
The PHYSICIAN assuming responsibility for all kinds of problems involving human life
The PUBLIC OPINION ANALYST formulating nationwide research programs
The SHIP CAPTAIN whose decisions are law, who does not falter in making them
The TRIAL LAWYER highly independent and self-directing
The FARMER who is his "own boss" in managing his farm
The ACCOUNTANT drawing up recommendations and plans based on the overall aspects of a business

Persons whose attitudes and activities show evidence of this trait may find work satisfaction and compatibility in job situations which involve Directing, Controlling, and Planning of an entire activity or the activities of others, as illustrated below:

Plans, designs, and oversees construction of buildings.

Prosecutes or defends suits involving offenses against society such as theft, murder, and arson. Conducts the trial, examining and cross-examining witnesses.

Devises, installs, and supervises operation of general budgets and cost systems.

Has charge of a group of inmates of a city jail. Is held responsible for the custody, discipline, and occupation of these inmates.

Attitude Clues

Do you like or dislike

To take charge of a job and get it done?
When a problem situation arises, and someone has to speak up with a plan, to be one to volunteer?
Hear a question asked of someone else when you think you could answer it better?
To just stick to a small detail of a job, leaving the overall aspects of it to someone else?

To make over your environment to suit yourself?
To be in "the thick of things," "in the limelight?"
Race others - anyway - in a game, driving faster, higher grades, higher bridge scores, to win, come out on top?
Being chairman of a meeting?

Dictatorial or bossy acquaintances?
Doing things your own way?
Taking initiative and planning your own work?
To hold office?
Being "in the lead," recognized as the "head," being "first."
Telling other people what to do?

Do you think you would like

To be a government official, club president, or superintendent of a work crew?
Have access to persons of power and influence?
Be an engineer and plan an entire flood control system?
Be responsible for other people's lives?
Be charged with maintaining order in a public emergency, such as a flood or riot?

Activity Clues

Have you (are you, do you)

Been responsible for social group managing: fraternity, sorority, etc.?
Like to put off decisions until you have plenty of time to really make up your mind as to the right thing to do?
Originated a petition or led a demonstration for a "cause?"
Studied drawings of machinery and planned how you could use such machinery?

Had a hand in "managing" things behind the scenes?
Always liked the idea of prestige and success which bestows fame, honor, money, influence?
Found yourself to be the center of attention and felt stimulated by it?
Tried to get elected to a political office, led a political rally?

Been involved in organizing an activity and planning something for everyone to do?
Admired "captains of industry?
Found that you usually make up your mind right away when an urgent decision must be made?
Feel you can think for yourself, not "kowtow to authority?"

Usually tried to get control of groups you are a member of?
Always want to be in the "thick of things" - find being in the sidelines unbearable?
Been a leader - athletic team, school, club, church, scouts, reserves, in military service?
Admired people with the courage to act?

Felt that giving orders is not the best way to manage people?
Been successful in initiating money-making activities on your own: evening job to buy a bicycle, babysitting to earn money for a trip?
Been in a position to give orders and been pleased at how well people responded?
Dreamed of reaching executive heights in your chosen occupation?

5 GREGARIOUS (RELATED TO DEPL)

GREGARIOUS: Adaptability to working with other people and cooperating with them, involving the ability to contact others in a successful manner and to achieve positive acceptance in a group. This may be thought of as a capacity for adjustment or as a disposition which

prizes agreeable working relationships

likes to be in the company of others

is not inclined to enjoy working alone

has no reservations about meeting people and making friends

wishes to obtain approval of the group, to "fit in"

is responsive to others, sociable

finds it pleasurable to meet and get to know people

when observed by others, may bring to mind personal qualities such as: friendly, "likes people," outgoing, companionable, "good company," agreeable, approachable, warm, sunny

As seen in workers:
The LOCAL TRANSIT OPERATOR taking in stride all kinds of people: complainers, handicapped requiring special attention, children traveling alone, and jostling hostile crowds during rush hours
The MINER working as a member of a closely-knit team
The CLERGYMAN exhibiting the personal warmth to invite approach by individuals in need of spiritual or other counsel
The SECRETARY alert and stimulated by constant interaction with people
The COMMERCIAL ARTIST functioning effectively as one member of an advertising team
The AGRICULTURAL ENGINEER conducting seminars on agricultural methods
The BUYER in his people-sensitivity which enables him to interpret their needs and tastes
The BARBER knowing when to talk and when to keep silent and listen to his customer
The NURSE in practice of social skills which are effective in dealing with people in all stages of illness and in their most difficult situations
The RECEPTIONIST who puts people at their ease and makes them feel instantly at home

Persons whose attitudes and activities show evidence of this trait are presumed to find satisfaction and compatibility in job situations which involve DEPL, Dealing with People, as illustrated below:

Makes appointments for employer with clients or customers.

Takes pictures of news events or of important personages for use in illustrating stories.

Supervises a group of workmen.

Attitude Clues

Do you like or dislike

Making plans with friends?
Studying the motives of people?
Making allowances for people who seem queer or far-out in some way?
Friendly people?
To speak to everybody you meet?

To find out what other people like to talk about?
To have somebody go along with you when you ride downtown, walk to school, or stop by to see a show?
Small talk?

Getting standoffish people to talk to you?
Friendly people?
To ad-lib, "talk off the cuff?"
To laugh when people tell jokes?

Personal chit-chat about people?
Listening to people talk about themselves?
Being alone?
Asking a person to accompany you somewhere?

Waving to an acquaintance across a room full of people, to let him know you see him?
Going up to a stranger and beginning a conversation?
Having people come to you for advice?
Keeping up with the latest gossip?

Do you think you would like to

Have a job in which you had little privacy or time to be alone?
A job in which you had to devote your attention to people all day?
Be surrounded in your work with a bevy of people coming and going?
Invite an orphan or refugee to come and spend the weekend with you?

Activity Clues

Have you (are you, do you)

Found people more stimulating to you than anything else?
Sometimes not liked to have people around?
When in a new situation, kept your eyes open for activities you might join?
Felt that belonging to "the gang," "the pack," etc., is absolutely essential for success in this world?

Gotten people to tell you about their hobbies?
Usually been counted as "one of the gang?"
Made it a point to remember names and faces?
Found that you prefer to be with someone you don't care much about, rather than be alone?

Made it a habit to join in with a group that is planning a trip before someone specifically invites you?
Take pride in thinking that wherever you go, you are always counted as one of the "in group?"
When faced with an evening alone, make it a rule to check to see if anyone you know is available to have dinner with you?
Always happy to see friends?

Find it easy to talk with people, cooperate with them, help them to carry out their plans?
Like knowing what people say about you?
Find starting in at a new school, going to parties, etc., exciting?
Felt you were at your best when socializing with people?

Been fascinated by just watching people going and coming in a busy airport, bus depot, or railway station?
Recruited club members or sold tickets for some event?
Found that people around you usually command your attention more than natural things, such as birds, the weather, etc.?

Been a school traffic director and found it fun?
Felt nothing is as important as maintaining a friendly atmosphere?
Noticed that sometimes people tend to think of you as a "lone wolf?"
Moved into a new neighborhood and found it exciting to make new friends?

6 ISOLATIVE (RELATED TO ISOL)

ISOLATIVE: Inclination to work alone and apart from others; adaptability to pursuits which involve physical isolation from others for long periods of time. This may be thought of as a capacity for adjustment or as a disposition which

prefers often to be alone rather than in the company of people

is amenable to performing an activity with no one else around

doesn't mind being left to own devices

can usually keep mentally occupied with own thoughts and observations

doesn't feel need for constant companionship of other people

likes to get away from "the crowd," perhaps away from the city into the open country

As seen in workers:
The FIRE LOOKOUT living alone on a mountaintop for months at a time
The operator of the ONE-MAN REMOTE WEATHER OBSERVATION STATION
The METER READER making his daily rounds alone
The TRAPPER spending his days setting and checking traps
The ASTRONOMER stationed alone in the isolated mountaintop observatory
A TYPIST who must work alone throughout the day at a logging or construction-job mobile office several miles from town and without personal or telephone contact with other people

(Note: In work situations periods of isolation and group participation may alternate. Involved in the concept of ISOLATIVE, however, is always the capacity to adjust to isolation, if not always inclination on the part of the person.)

Persons whose attitudes and activities show evidence of this trait are presumed to find satisfaction and compatibility in job situations which involve ISOL, Working Alone and Apart in Physical Isolation from Others, as illustrated below:

Keeps a close watch on crops belonging to farmers who are under contract to sell crops to the canning factory.

Observes celestial bodies with telescopes equipped with such devices as cameras and photometers. Computes position of stars and planets.

Is stationed on high ridge or other point commanding a view of small area of forest and keeps sharp lookout for signs of fire. Lives alone and isolated for periods of 3 or 4 months.

Attitude Clues

Do you like or dislike

To be left to your own devices?
Traveling alone?
To have a room or apartment all to yourself?
Being out of the town or city, away from crowds of people?

When taking an evening walk, to be joined unexpectedly by an acquaintance who happens by?
Being out of personal or telephone contact with other people?
Activities which you can carry out independently of other people?
To think a problem through by yourself, without getting involved in listening to other people's advice?

Being thought of as a "lone wolf?"
Driving alone?
Being by yourself for long periods of time?
The quietness of a laboratory?
Shopping for clothes without someone with you to help you consider selections?

Eating alone?
Being out in the woods by yourself?
Going to an entertainment alone?

Do you think you would like to

Walk pipelines through a wilderness area?
Patrol school grounds all night?
Live in the monastic solitude of a mountaintop weather observation station?
Stand watch on a ship, alone for hours, looking for rocks, buoys, or other ships?
Man an all-night switchboard, seldom seeing anyone come or go?

Activity Clues

Have you (are you, do you)

Gone on long hikes alone and enjoyed it?
Hunted or fished alone?
Envied a hermit?
Thought of yourself as being your own favorite company?
Ever thought that being in solitary confinement would be the worst fate you could think of?

Remember Daniel Boone in history?
Roamed the woods all by yourself, collecting specimens?
Feel confident of your inner resources, so that you don't have to depend on the companionship of others constantly to find life interesting?
Ever thought about how long you could work in an occupation which never gave you a chance to see anyone?

Passed up a party because you preferred spending your time on a project of your own?
Had a hobby such as star gazing, bird watching, or ant observation which engaged your solitary attention for long periods?
Ever thought about how you would adjust to being the subject of an experiment which required you not to see another human being for 3 or 4 months?
Tend to occupy yourself with your own thoughts a great deal?

Tend never to feel lonely, or at a loss, because there is always plenty to think about, whether anyone else is around or not?
Preferred to stay home and read to an evening out with friends?
Been forced to stay by yourself for a spell, and felt it maddening that there was no one to talk to?
Felt that there is a great deal in the world to absorb your interests, besides people?
When glimpsing a seldom-seen acquaintance on the street, stop and talk awhile if at all possible?
Been intrigued by the idea of spending the night alone in a "haunted house?"

7 INFLUENCING (RELATED TO INFLU)

INFLUENCING: The ability to influence people in their opinions, attitudes, or judgments about ideas or things. Tendency towards persuasive behavior in face-to-face or indirect communication situations. This may be thought of as a capacity for adjustment or as a disposition which

is motivated to convince others of a point of view

tends to seek out people directly or indirectly for the purpose of persuading them in some way

develops astuteness in evaluating other people's reactions

tends to structure reality in chosen situations through appropriate emphasis or underplay so that facts presented support a point of view

impresses people as being gifted with the capacity to imbue others with ideas or feelings either through speech or other mode of communication

As seen in workers:
The COUNSELOR motivating delinquent youth towards a constructive life
The CLERGYMAN deliverying a sermon designed to convert nonbelievers to a particular faith
The PHYSICIAN imbuing his patients with confidence in their chance of recovery from an illness
The RADIO ANNOUNCER who speaks with conviction and enthusiasm to "push" the products manufactured by the program sponsor
The POPULAR SONG WRITER using the planned cliche as a device to make his lyric "sell"
The COMMERCIAL ARTIST transforming ideas into persuasive pictures
The SALESMAN "sizing up" his prospect as a basis for planning his "sales pitch"
The MOTIVATIONAL RESEARCH SPECIALIST devising tools to probe the motivations and influence the reactions of people
The NEWSPAPER EDITOR rallying readers for or against a cause

People whose attitudes and activities show evidence of this trait are presumed to find satisfaction and compatibility in job situations which involve INFLU, Influencing People in their Opinions, Attitudes, or Judgments about Ideas or Things, as illustrated below:

Writes original descriptive advertising copy, extolling the merits of a certain product.

Visits persons undergoing treatment for social diseases and urges delinquent patients to continue their attendance at the clinic.

Seeks out prospects who may be interested in the hotel's facilities for social gatherings, banquets, and conventions, attempting to induce the prospects to hold social functions at the hotel.

Attitude Clues

Do you like or dislike

To seek out prospects to sell them something or get their cooperation in some way?
Taking a leading part in a political rally?

Listening to someone tell a story?
Telling a story yourself?
Running for political office or campaigning for someone else who is running?
Writing letters, reports, etc., for the purpose of convincing others of a point of view you hold?

Do you think you would like

To call on people to sell them something - cosmetics, insurance, etc.?
Being chairman of a Red Cross disaster relief drive?
Calling on firms to interest them in a line of goods?
Having a job which would give you the opportunity to motivate others towards a constructive life?
Writing a letter to the public opinion column of the daily paper to get your views on a civic issue across to the public?

Activity Clues

Have you (are you, do you)

Found it easy to talk to strangers?
Think you have the knack of putting your best foot forward, making people see things in their most favorable light?
Think the ability to sell a plan of action is a more important contribution than thinking of it in the first place?

Admire politicians more than anybody?
Been a master of ceremonies?
When hearing people talk about a place you've been, join right in and relate your experiences there?
Gone out of your way to win an argument?

Been involved in a good will campaign of any kind?
Enjoyed getting people who are reserved or distant to talk to you?
Won box-top or other contests on the basis of your skill in relating the good points about some product?
Solicited donations?

Often had people to come to you for advice or information?
Given pains and thought to "selling yourself" in a letter of application for employment?

Sold things to people who didn't really need them, but couldn't turn you down?
Taken first or second prize in an advertising essay contest?
Felt all "shook up inside" at the idea of having to sell anybody anything?
Had a paper route and solicited new subscriptions?

Looked at house-to-house salespersons and thought you would rather scrub floors than go through with all that?
Felt challenged to overcome another person's indifference when he doesn't seem to care whether he gets to know you or not?
Collected contributions for charity fund drive, school project, etc.?
Asked people to vote for a friend or contribute to a good cause?

8 SELF-CONTROLLED (RELATED TO PUS)

SELF-CONTROLLED: Ability to perform adequately under stress when confronted with the critical or unexpected or when taking risks. This may be thought of as a capacity for adjustment or as a disposition which

maintains self-control under conditions of provocation and/or emergency

exhibits calmness and presence of mind in hazardous or critical situations

regulates excitement and keeps nervousness under control

can maintain equaniminity in the face of resistance, indifference, or affront

is relatively free from oscillating emotional moods

when observed by others, may bring to mind personal qualities such as: constant, steady, balanced, stable, reposeful, calm, unexcitable, even-tempered, nonexplosive, nonvolatile, self-possessed, nonviolent, unruffled, cool, collected, level-headed, "does not go to pieces"

As seen in workers:

The MINER required to keep his wits about him as he figures his way out of a cave-in or fire

The HIGH WIRE ARTIST or the spectacular JUMPER performing perilous feats of daring

The NEWSPAPER REPORTER facing great personal danger from the underworld to break a crime story

The LINEMAN in his hazardous work with high voltage lines down during a violent storm

The ASTRONAUT reading off fuel pressure figures with the cool deliberation to insure accuracy as he sits tight and sweats out the possibility of a site explosion, when caught in an aborted space-craft launching

The EMBALMER who must make presentable the cooked faces of fire victims - a task which might be nausea-prevoking to the squeamish

The GEOLOGIST calmly logging observations as he descends by helicopter into the crater of an exploding volcano

The FREAK in the circus who exhibits for an admission fee his physical abnormalities, requiring of him personal toughness to survive the ridicule or disgust of spectators

The NITRATOR OPERATOR quickly scanning panel boards and desperately checking lights, switches, dials, knobs, and buttons to find what is wrong with malfunctioning equipment which is processing TNT, requiring icy nerves to maintain reasoning processes at peak efficiency

The CONSTRUCTION WORKER maintaining steady nerves as he works at the edge of roofs, on swaying scaffolds, etc.

The TEST PILOT keeping his voice calm and performance finely controlled as he makes the cry of disaster "mid-air, mid-air"

The NURSE coping with stress-producing situations such as attending dying patients, providing comfort and support by a calm and patient air, devoid of irritability or tenseness

Persons whose attitudes and activities show evidence of this trait are presumed to find satisfaction and compatibility in job situations which involve PUS, Performing Under Stress, as illustrated below:

Operates upon the human body, excising the flesh with sharp-bladed scalpels. Exercises constant care, with no deflection of attention, regardless of distractions.

Fights fires as a member of a fire-fighting force. Must allay panic and try to discourage fatal leaps.

Attitude Clues

Do you like or dislike

Working under pressure?
To deal with an emergency?
Being around nervous people?
Working against deadlines or meeting quotas?

Having to abide by complicated safety regulations?
Being around unfriendly people?
Facing physical danger?

Do you think you would like

To be in a situation in which you had to take a chance with your own life and perhaps the lives of others?
A job where an instant of indecision could wreck a machine or kill a person?
A job in which you took care of dying persons and tried to promote their mental comfort?
To operate a large excursion bus along hazardous rain-slick mountain roads?
Solving emergency problems while test flying experimental aircraft?
To be a skin diver who gets very high pay for working in waters known to be frequented by man-eating sharks?

Activity Clues

Do you (have you, are you)

Taken a course in Red Cross life-saving procedures?
Ever set off a charge of dynamite or otherwise worked with explosives?
Worked on high places, rigging tree tops or erecting scaffolding?
Felt that you have been able to keep an even temper when things happen that could upset you?

Been a marshal or had another job which involved maintaining order at a public event?
Been involved in any situation requiring adherence to very high safety standards?
Had to deal with people who seemed hysterical to you?

Ever encountered a situation which required split-second action on your part in what seemed to you to be a life-and-death situation?
Been in a situation in which you felt you were being ridiculed or laughed at and didn't let yourself be bothered by it?
Been engaged in rescue work in which you were responsible for emergency action such as giving mouth-to-mouth resuscitation, bandaging a badly bleeding wound, or giving other life-saving treatments, requiring accurate decisions and rapid action on your part?

Been in a situation where it was necessary for you to keep calm and cheerful even though you knew the people around you were unfriendly and hostile?
Done first-aid work such as splinting wounds?
Been at the scene of an automobile wreck, or bad accident of any kind, when you had to get help for yourself of others?

9 VALUATIVE (RELATED TO SJC)

VALUATIVE: Adaptability to working with qualitative information in situations where different people may arrive at different conclusions on the basis of the same evidence; liking for dealing with facts that can be experienced directly; compatibility with the making of value judgments, with taking, when necessary, an intuitive approach to problem-solving. This may be thought of as a capacity for adjustment or as a disposition which

does not want to be reduced in scope of data considered

tends to think of events as unique occurrences

resists high degree of cataloging and categorization

does not require a formal system of evaluation as a basis for coming to conclusions

Note: There is no implication of partiality or personal bias, but only that the person adjusts well to acting upon basis of personal knowledge, direct experience, or other form of qualitative information. Resulting behavior may be judging values and making choices when dealing with alternatives, and may range from acting on nearly automatic "hunches" to expert appraisals of trained, direct observations.

As seen in workers:
The CLERGYMAN judging moral values
The PHYSICIAN making a diagnosis on basis of case history and bedside observation
The SCIENTIST formulating a theory, extrapolating from the known to the unknown
The TAXIDERMIST achieving lifelikeness in stuffed animals guided by his specialized knowledge and expert judgment
The BIOGRAPHER reconstructing the life of an individual, inferring from scraps and threads of evidence
The POLICEMAN deciding when to use force to quell disturbances or the DETECTIVE employing "hunches" in lining up suspected law violators for fingerprinting
The STONEMASON using sense of line, proportion and color in chiseling and shaping stones and placing them in pleasing juxtaposition
The ELECTRICIAN selecting, out of a variety of possibilities, types of tests to make
The SOCIOLOGIST arriving at tentative conclusions by inspecting survey data
The COMPOSITOR setting up type according to mental image of finished product
The BATER deliming hides on the basis of their appearance

Persons whose attitudes and activities show evidence of this trait are presumed to find satisfaction and compatibility in job situations which involve SJC, The Evaluation of Information Against Sensory or Judgmental Criteria, as illustrated below:

Examines and appraises government records of public interest according to historical significance and enduring value and recommends disposal or destruction of materials.

Gives advice relative to fashionable shades and color combinations in paper, paint, draperies, and the like.

Weighs, measures, and mixes component ingredients of flavoring extracts * * * Tastes solutions after mixing operation and reports any variation.

Attitude Clues

Do you like or dislike

Dealing with information which cannot be proved?
To act on your "hunches?"
To make a choice from among several possibilities?
Breaking down a problem into steps so you can analyze it?
To put information into a formal definition or formula?

To go about your thinking in a free-ranging informal manner?
When writing a theme, to begin at the beginning, and progress to its conclusion in a systematic manner?
When writing a theme, to begin with what comes to you first?
To be considered an "intuitive person?"

Do you think you would like

A job which demanded you to make decisions on the basis of a few facts which could be proved, and required you to ignore all other aspects of the situation; e.g., a judge basing a decision on a legal technicality, ignoring the full range of facts in a situation?
A job which required you to think about all possible answers to problems; e.g., an automobile mechanic considering the various reasons why an automobile engine has stalled?
A job in which you had to make instant personal decisions between two unpleasant alternatives; e.g., the policeman deciding whether to shoot or be shot at?
A job in which you had to judge completion of the work by the way it looked; e.g., the dressmaker deciding when the dress is fitted properly by the way it hangs on the model?

Activity Clues

Have you (are you, do you)

Often arrived at conclusions which you felt to be right and only afterwards thought up logical reasons for the conclusion?
When following a recipe, and the food does not taste the way you want it to, add a dash of this and that?
Feel that the intelligent person should be able to trust his feelings on most public issues, even though he does not possess expert knowledge?
Often felt that for some things there is no single answer, or perhaps no answer at all?

When you have had a problem to solve, often let it go for a while - quite likely if you do, its solution will "pop into your head?"
Made decisions just on the basis of what you could see - or taste, hear, smell?
When walking down the street, or when you get up in the morning, found that solutions to problems frequently flash into your mind?
Prefer when making judgments, to base your decision on formal standards, ignoring your personal reaction to the overall situation?

Read about a phenomenon about which little is known and figured out your own explanation for it?
Studied the posture of a baseball pitcher to figure out his next move?
Rather judge an individual on the basis of all you personally know about him than on the statistical findings about people of his class?

0 OBJECTIVE (RELATED TO MVC)

OBJECTIVE: Tendency to insist upon data that can be communicated and made public as a basis for making decisions; to demand that conclusions be reached on the basis of conscious calculation, close reasoning, and reproducible data; to require a methodology that involves standardized observing processes. This may be thought of as a capacity for adjustment or as a disposition which

> thinks problem-solving should be approached rationally and that conclusions should be grounded upon concrete evidence which different observers can agree on
>
> wants to regulate risk of failure by subjecting data and evidence to a system that provides for measurement and verification

As seen in workers:
The PHYSICIAN securing all tests and readings possible to check preliminary diagnosis
The SCIENTIST setting up controlled experiments to test his generalizations and correct faulty judgments
The STRUCTURAL WORKER testing his work as he goes along on the basis of data secured by transits, plumb lines, tapes, and levels
The DETECTIVE verifying the identity of suspects through fingerprints to insure no mistake is being made
The STATISTICIAN subjecting survey data to formal statistical processing as a prerequisite to understanding it
The TEACHER evaluating pupil performance according to results of standardized tests
The TECHNICIAN not wishing to go beyond obviously substantiated data in compiling a report summary
The ENGINEER designing a bridge, relying on tested, proven facts to work out problems of structural stress
The LAWYER searching previous court decisions for precedents before arriving at conclusions
The PROCESSING WORKER securing readings from thermometers, scales, and meters as a basis for regulating equipment to maintain quality control of product
The POLICE PHOTOGRAPHER striving to take pictures which give rise to no questions of fact
The ASTROLOGER drawing up a horoscope by strict mathematical principles

Persons whose attitudes and activities show evidence of this trait are presumed to find satisfaction and compatibility in job situations which involve MVC, The Evaluation of Information Against Measurable or Verifiable Criteria, as illustrated below:

Assists in examining and testing metal samples to determine their physical properties. Tests samples in pressure devices, hot-acid baths, and other apparatus to determine strength, hardness, elasticity, toughness, or other properties of metals.

Examines works of art, determining their authenticity by means of X-ray, chemical tests, or other scientific aids.

Makes diagnosis, from laboratory findings of the PATHOLOGICAL TECHNICIAN, of the presence and status of disease in the human body.

Attitude Clues

Do you like or dislike

The study of logic?
Sticking to that which can be proved?
Making decisions in line with prevailing rules and regulations?

Activities which give you the opportunity to test and measure in some way?
Something concrete "to go on" before coming up with a decision?
To consider "hunches" in making up your mind?

To be systematic in whatever you do?
Situations in which there are verifiable standards you can count on?
Making "off the cuff" judgments?
Working with ideas that are precisely defined so you can be sure just what is meant?
Planning things in detail before you do them?
Outlining a theme before you write it?

Breaking down a problem into steps so you can systematically analyze it?
To accept information "on faith?"
Uniform standards to live by?
The use of computers as a basis for making decisions?

Do you think you would like

A job in which you had to adhere to verifiable facts such as instrument measurements and test results to back up all your decisions and actions?
A job in which you had to rely completely on your own direct observations and experiences as a basis for making judgments and solving problems?

Activity Clues

Have you (are you, do you)

Try to take facts as they are, ignoring your own wistful thinking?
Prefer to accept a small bit of verified information about a subject over the larger picture of your personal observation of it?
Think that questions which cannot be determined to be either true or false are meaningless?

Believe that any problem can be broken down into a chain of cause-and-effect relationships?
Feel that expression of opinion should be left to experts?
Think of yourself as having a rational view of the world?

Believe that it is always possible to get to the bottom of an issue and discover facts which everyone can agree upon as true?
See yourself as a person who likes facts and accepts them, letting the chips fall where they will?
Think, in decorating your house or apartment, you would get a professional decorator, rather than work it out yourself?
Like realistic standards and feel you are guided by reality in the conduct of your life?

When you have a decision to make, get the opinion of experts as a basis for making up your mind?
Feel that the only real knowledge is that which can be demonstrated on the basis of proven fact?
Believe that if a recipe is followed precisely under the same conditions, the baked product will always come out the same?
Think you can give up a belief you hold, if an experiment proves you wrong?
Think of yourself as having a healthy skepticism which keeps you from being easily taken in by propaganda?

X SUBJECTIVE (RELATED TO FIF)

SUBJECTIVE: Desire for self-expression, for pursuits which permit individuality of taste, projection of personality, or adherence to personal values, i.e., the making of choices uniquely expressive of own mental and emotional background. This may be thought of as a capacity for adjustment or as a disposition which

prefers to work with own ideas rather than those of others

is very much aware of and confident of own tastes and viewpoints

values individuality above conformity to prevailing fashion or mode

doesn't mind being different; prefers not to imitate

tends not to feel bound by precedent

is not prone to seek a model or idea from others but wants work to bear stamp of own personality

views environment in terms of own feelings

As seen in workers:
The ART EDITOR writing opinions and criticisms of art exhibits
The CAKE DECORATOR icing and decorating cakes according to own ideas of what is artistic
The CHARACTER SINGER interpreting the emotion of the song and applying own style
The MILLINER adapting existing hat designs to dramatize personal characteristics of customers
The ARTIST's MODEL achieving job satisfaction through projection of own personality into work
The ARRANGER altering melodies in terms of particular possibilities he sees
The STONE CARVER whose interpretation of the diagram or model determines the artistry and beauty of the work
The DRAMATIC READER reading selections and performing the various parts
The WATER COLORER using own esthetic tastes in applying colors to bring out lights and shades in photographs
The RETAIL ARTROOM HEAD using own ideas to adapt embroidery designs
The EXPRESSIONIST PAINTER depicting inner sensations and feelings
The POET voicing emotions, feelings, and viewpoints uniquely his own

Persons whose attitudes and activities show evidence of this trait are presumed to find satisfaction and compatibility in job situations which involve FIF, Interpretation of Feelings, Ideas, and Facts in Terms of Personal Viewpoint, as illustrated below:

Designs artistic effects for outside displays, such as street decorations, fair grounds, and building decorations, using flags, cloth, and crepe paper.

Attends musical events and writes review, basing opinions on his background of music.

Attitude Clues

Do you like or dislike to

Do work in which you can express your own feelings rather than those of others?
Develop your personal style of dress, home decor, letter writing, etc.?
Choose your subject for a composition, exhibit, or club or school project?
Develop on your own ideas rather than seek out the ideas of others?

Plan color schemes in your favorite colors?
Avoid that which is trite and imitative?
Write up what you think about a play, movie, book, civic topic, etc.?
Use your own judgment rather than follow a recipe or instructions?
Express your feelings in music, art, writing, and the like?

Do you think you would like to

Give advice to people on decorating their homes, fashions to wear, etc.?
Illustrate magazine articles?
Be an interpretative dancer?
Be a TV personality?

Style people's hair?
Be a literary, art, or music critic?
Arrange a musical score to obtain a desired effect?

Activity Clues

Have you (are you, do you)

Carried out own ideas in decorating for a party or other event?
Written stories, music, or songs?
Done impersonations?
Made up own comic strip?
Developed own special recipes for making cakes, pastries, etc.?

Designed and made own greeting cards?
Experimented with lighting effects?
Thought up posters to advertise a school play or other event?
Worked out own decorating plans for house or room?
Invented new dance steps?

Developed own "specialty" menus or dished?
Thought up puzzles?
Planned decorations, using your favorite colors?
Landscaped part or all of the home grounds?
Planned an exhibit at a flower or art show?

Wrote criticisms of movies, plays, or art shows?
Developed your own juggling or sleight-of-hand acts?
Chosen and arranged furniture?
Thought up jokes or humorous cartoons?
Imagined and wrote dramatic incidents?

Entered a contest such as poetry, box-top essay competition, or other?
Mixed food to obtain new flavors?
Worked out a special style for your hair or for someone else?

Y RIGOROUS (RELATED TO STS)

RIGOROUS: The ability to be strict in adhering to rules, procedures, or other norm in order to achieve exact conformity to specifications, principles, or other standard. This may be thought of as a capacity for adjustment or as a disposition which

highly regards integrity of workmanship

is willing to check and double-check to achieve accuracy

strives for perfection

is capable of extreme care, great effort, and constant attention to see that a task is well done

appreciates the necessity of following specifications, formulas, etc., exactly when precise results are required

can be painstaking and meticulous in dealing with details

As seen in workers:
The PHARMACIST mixing ingredients by exact formula
The TYPIST copying names and street addresses without error
The ELECTRICIAN strictly adhering to electrical codes
The SCIENTIST carrying out laboratory experiments, meticulously controlling all variables
The RADIOLOGIST exercising extreme caution in regulating length and intensity of X-ray exposure on patients
The MACHINIST painstakingly finishing parts when a mistake of one ten-thousandth of an inch would ruin the part
The SEWING-MACHINE OPERATOR precisely guiding material being sewed to produce neat, even seams
The MATHEMATICIAN adhering unswervingly to rigid logical procedures
The GAS-COMPRESSOR OPERATOR manipulating numerous valves in correct sequence when controlling critically reacting chemicals
The CONTROL-TOWER OPERATOR seeing that radio equipment is maintained in precise frequency adjustment under all circumstances
The careful RUG REPAIRMAN reweaving damaged areas of costly oriental rugs, exactly duplicating original design
The BALLET DANCER's precision control of timing and pattern of dance movements

Persons whose attitudes and activities show evidence of this trait may find work satisfaction and compatibility in job situations which involve STS, Precise Attainment of Set Limits, Tolerances, and Standards, as illustrated below:

Compounds and dispenses medicines and preparations as directed by licensed PHYSICIANS AND DENTISTS.

Designs, lays out, and paints signs. When making signs with gold letters, picks up gold leaf with soft hair brush, and blows it in place; holding it carefully so that the sheet of gold will cover the entire width of letter. Must blow with exactly the right force as blowing too hard causes the thin gold leaf to tear.

Inspects metal airplane tanks prior to installation in airplanes. Observes pressure testing to determine that tests are performed according to specifications. Compares measurements of tanks, taken with micrometers and machinist's scales, with blueprints to insure compliance with specifications.

Attitude Clues

Do you like or dislike to

Check and double-check work?
Keep things orderly and systematic?
Put in great effort to get something exactly right?

Do work requiring extreme care and constant attention?
Copy figures in neat, orderly rows?
Work in the school lab?
Be very careful to get anything you do just right?

Do you think you would like to

Do meticulous work, like a druggist filling prescriptions, when a mistake would have tragic consequences?
Spend hours, if necessary, to locate a misplaced decimal point?
Pay close attention to the output of products coming from a machine to see that they are free of flaws?
Be responsible for the absolute perfection of goods you have inspected?
Do work of such fine accuracy that a mistake of one ten-thousandth of an inch would ruin the piece you are working on?

Activity Clues

Have you (are you, do you)

Made it a point to turn in neat examination papers?
Taken pains to learn just the right way to season food?
Carried out very precise experiments in the school lab?
Learned the exact settings on your camera to get just the kind of pictures you want?
Proofread club membership lists for accuracy of name spellings and street addresses?

Been secretary for a club and made it a point to send out neat letters?
Learned sewing or had a sewing course and really enjoyed fitting a dress properly or precisely matching designs in draperies?
Paid close attention in timing in cooking to get best results?
Studied specimens under microscope and made careful records of what you saw?
Typed letters that were free of typographical errors?

In a science course, computed eclipses or other natural phenomena accurately?
Taken pains to be sure your letters are written and spaced neatly?
Gone to trouble to see that things like decimal points and punctuation are placed properly?
Made scale plans for model airplanes, boats, trains, etc.?

Been a treasurer and proud of keeping your accounts in apple-pie order?
Followed exact formulas in carrying out laboratory experiments?
Set up machines or pieces of furniture, carefully following directions and diagrams?
Been responsible for cleaning, and kept a spotless kitchen or shining bathroom?
Spent hours hunting errors in arithmetic problems?

COUNSELOR'S INTERVIEWING GUIDE FOR APPRAISING EDUCATIONAL DEVELOPMENT

TABLE OF CONTENTS

BACKGROUND 55

SECTION I - APPRAISING GENERAL EDUCATIONAL DEVELOPMENT (GED) 56
Definition 56
Regarding the GED Scales 57

SECTION II - SPECIFIC VOCATIONAL PREPARATION (SVP) 62
Definition 62
Standards for Evaluating Specific Vocational Preparation 63
Sources of Information on Specific Vocational Preparation. 63

COUNSELOR'S INTERVIEWING GUIDE FOR APPRAISING EDUCATIONAL DEVELOPMENT

BACKGROUND

The main problem with which the counselor must cope in dealing with information about a counselee's education and training is how to evaluate it.

Assuming that the counselor gets all of the facts about an applicant's training, he may face any of the following situations in trying to relate these facts for appraisal purposes in the total picture of the applicant.

1. School Training

(a) Standards for the content of courses vary from school to school and from year to year (e.g., certain science subjects, like physics, have changed content in recent years, and so have practical courses like radio or electrical repair).

(b) Curriculum standards for graduation and achievement required for graduation vary from school to school, and from track to track within the same school, so that it is not possible to define any certain level of school attainment in terms of proficiency level to be expected of graduates.

2. Inconsistencies Between Training and Work Experience

Persons formally trained for one occupation or field frequently get experience in a very different occupational field, or they may be in lower grade jobs which do not make use of their training.

3. Training Obtained Outside School or the Work Environment

Examples of this are self-directed study, training acquired in military service or in institutions (e.g., corrective and hospital), avocational experience, and civic or religious responsibilities.

The information provided in this Guide may be used to evaluate the educational development of the counselee and also to inform him about kinds and duration of vocational preparation he may wish to pursue.

SECTION I - APPRAISING GENERAL EDUCATIONAL DEVELOPMENT (GED)

DEFINITION

General Educational Development embraces only those aspects of education, formal and informal, which contribute to the worker's

(a) Reasoning development, adaptability to the social environment, and ability to follow instructions.

(b) Acquisition of functional knowledges such as language and mathematical skills.

GED is education of general academic nature such as obtained by study in elementary school, high school, or college, when it does not have a recognized, fairly specific occupational objective. It also derives from experience and self-study.

GED is determined by using a scale which is based on varying degrees of:

(a) Reasoning Development

(b) Mathematical Development

(c) Language Development

Reasoning Development relates extensively to the person's capacity to master concepts and systems, solve problems, make judgments, understand and carry out instructions, and to his adaptability to the social environment.

It is sometimes easier to get at the counselee's development through his Mathematical or Language Development. These two items taken together with Reasoning Development provide different avenues to General Educational Development.

Very often Reasoning, Mathematical, and Language Development correlate. All three are to a considerable extent measurable by tests. However, even if the capacity or aptitude for mathematics or language is present, the actual "tool" knowledge may not have been acquired. The major point to remember is that we are dealing with acquired or observable skills and knowledge for which we need some evidence beyond aptitude measurements or learning ability.

In appraising a counselee's GED, each of the three factors should be considered separately and he should be rated according to the highest one (if he is higher in one than the other). The basic thing to keep in mind in evaluating any of the GED factors is that GED levels do not relate only to the grade attainment of formal schooling or to the worker's job experience, but encompass his total schooling, experience, and special interests which may include civic roles, hobbies, religious activity, club participations, and reading. Life is viewed as a continuing developmental and educational process which cannot be evaluated simply in terms of a mechanical matching with the individual's last school attainment.

There is no adequate basis for estimating General Educational Development except on the basis of all significant information which counselors customarily explore in arriving at an appraisal. The entire range of facts about the counselee must be fully obtained, interpreted, and evaluated according to the counselor's judgment.

Consider his total development; weigh all evidence against each of the three factors; and rate him at the highest level which applies. To be rated at his highest level does not require that he meet all the criteria of the particular aspect of GED (whether Reasoning, Mathematics, or Language) but only the criteria which are necessary to meet the requirements of his vocational objective.

Following are some of the kinds of information which can be explored as a basis for a GED estimate. The Scales for Estimating GED can serve as an aid in this process.

1. School achievement: track, if any; subjects studied; grades, honors, special recognition of any kind; particular interests or achievements in mathematics, science, language, humanities, arts, music.

2. Vocabulary, ability to communicate verbally during the interview, speaking and writing accomplishments, and reading habits.

3. Spare-time activities and interests which may provide clues to personal development.

4. Achievement in work situations, both in work performed and personal relations.

5. Inconsistencies (or apparent inconsistencies) between two or more factors such as educational attainment and interest; work experience and goals; and economic and social situation. When the counselor notes an apparent inconsistency of information, he has a good lead to explore further and to ask for the counselee's interpretation - as well as to make his own evaluation of the facts at hand.

REGARDING THE GED SCALES

In counselee appraisal, levels 1 and 7 are important chiefly as reference points. The counselor will probably not encounter many employable persons whose GED is on the 1 level. Conversely, he will probably not encounter many whose GED is on level 7, for the reason that most persons whose general educational development has reached the 7 level will not be involved in the problem of career planning. Analysis of the scale will show that this level applies to highly creative levels of development, which usually cannot be demonstrated except by successful occupational and related activity, or achievements on the most advanced educational levels. Level 7 is not used in connection with jobs in the Dictionary of Occupational Titles, the highest level used being 6.

Occupational Rating Scale
Scale 1

SCALE OF GENERAL EDUCATIONAL DEVELOPMENT

Capability to Immediately Function in One or More of the Following Ways:

Level	Reasoning Development	Mathematical Development	Language Development (Comprehension and Expression Levels)
7	Apply principles of logical or scientific thinking to a wide range of intellectual and practical problems. Deal with nonverbal symbolism (formulas, scientific equations, graphs, musical notes, etc.) in its most difficult phases. Deal with a variety of abstract and concrete variables. Apprehend the most abstruse classes of concepts.	Work with a wide variety of theoretical mathematical concepts and make original applications of mathematical procedures, as in empirical and differential equations.	Literary works of a highly connotative nature, often aimed at a specialized audience, as Stein, Eliot, Auden. Professional journals geared to a specialized audience, in which subject matter is highly technical and expression very precise, as Journal of Educational Sociology, Science, the Journal of Counseling Psychology, the Physical Review, etc. Works in logic and philosophy in which the most abstruse concepts are expressed in very abstract language, as Kant, Whitehead, Korzybski, Bertrand Russell. The spoken word as in addresses and lectures to such specialized audiences as professional societies and graduate seminars.
6	Apply principles of logical or scientific thinking to define problems, collect data, establish facts, and draw valid conclusions. Interpret an extensive variety of technical instructions, in books, manuals, mathematical, or diagramatic form. Deal with several abstract and concrete variables.	Make standard applications of advanced mathematics, as differential and integral calculus.	Literary journalism which requires a wide vocabulary and high level of literary cultivation as Saturday Review (of Literature), New Yorker, Harper's Magazine, Atlantic Monthly. Scientific journalism which is technical and precise, not aimed at a specialized audience, but rather to persons of high literacy, and in and out of science, e.g., Scientific American. The spoken word on similar standards of literacy, e.g., radio program Invitation to Learning, University Explorer, etc.

Level	Reasoning Development	Mathematical Development	Language Development (Comprehension and Expression Levels)
5	Apply systematic principles to solve practical problems. Interpret a variety of instructions furnished in written, oral, diagrammatic, or schedule form. Deal with a variety of concrete variables.	Perform ordinary arithmetic, algebraic, and geometric procedures in standard, practical applications.	Journalistic and other communications media which may deal with technical subject matter and have high literary standards, but geared to popular understanding in the vocabulary used in writing or discussion style, as Science Digest, most articles in Saturday Evening Post and Life, Meet the Press (radio and TV program), or Face the Nation (TV program).
4	Apply common-sense understanding to carry out instructions furnished in written, oral, or diagramatic form. Deal with problems involving several concrete variables.	Make arithmetic calculations involving fractions, decimals, and percentages.	Communications media which are understandable to most segments of the population because of uninvolved sentence style and vocabulary usually restricted to words easily understood by the general public, as Reader's Digest, straight news reporting in newspapers, and the ordinary newscasting of Douglas Edwards, Lowell Thomas, and Huntley and Brinkley.
3	Apply common-sense understanding to carry out detailed but uninvolved written or oral instructions. Deal with problems involving a few concrete variables.	Use arithmetic to add, subtract, multiply, and divide whole numbers.	Communications media which employ a style of short sentences and simple concrete vocabulary so that practically the entire reading population can comprehend, as is used in movie, "confession," and many "pulp" magazines, comics, most advice columns, and typical radio and TV daytime shows.
2	Apply common-sense understanding to carry out oral or written one- or two-step instructions in standardized situations involving one or two occasional variables.	Perform simple adding and subtracting.	Sign name and understand what is being signed. Read simple lists, addresses, safety warnings, road signs. Keep very simple production records.
1	Apply common-sense understanding to carry out simple oral or demonstrated instructions. No variables.	None.	Illiteracy or functional illiteracy (no reading, speaking, or writing required)

For Appraising Counselees
Scale 2

SCALE OF GENERAL EDUCATIONAL DEVELOPMENT

Clues to General Educational Development in Counselee Appraisal:

Level	Reasoning Development	Mathematical Development	Language Development
7	Graduate degrees. Recognized outstanding creative achievement in science, business, art, politics, or other sphere of life. Social development on the highest levels of cultivation, as professional disciplines dealing with understanding of the individual or interpersonal relationships; or those broadly identifying with society, as statesmen and government leaders; or those mastering the most complex esthetic systems, as top-flight orchestra conductors or choreographers.	Graduate degrees in mathematics (including statistics, accounting, actuarial mathematics) and related. Work experience involving original work in mathematics. Contributions to mathematical and scientific journals. Recognition through scholarships, awards, winning of national and other competitions. Author of books on higher mathematics, especially those which present new mathematics or explain mathematics creatively.	Graduate degrees in English, literature, languages. Literary reputation (as Robert Frost, Ernest Hemingway, Dylan Thomas, or Helen Keller) Author of articles, plays, poems, essays, novels, biographies, or other literary form recognized by other writers and critics of high literary standards. Winner in writing competitions. Articles published in professional journals. Sermons, lectures, political addresses, legal opinions and summations, editorials, and newspaper, radio or TV commentaries, which have gained recognition for originality and literary value.
6	Undergraduate degrees. Work experience carrying out the principles of an organized professional endeavor in science, law, management, theology, medicine, or other. Social development on levels of such professional disciplines as the ministry, teaching, counseling, or social work which are carried out according to organized standards of responsibility and ethics; or in terms of advanced standards of esthetic curtivation as in dramatics or concert singing.	Undergraduate degrees in mathematics. Graduate courses successfully completed with good grades. Work experience using advanced mathematics. Awards, scholarships, winning in competitions. Articles or texts written which involve standard applications of advanced mathematics.	Undergraduate degrees in Englist, literature, languages, and related, including graduate courses. Lecturing, as preparing and deliverying sermons, legal summations, or high school teaching. Making talks to civic clubs, and organizations. Writing articles, narrative reports, technical correspondence, newspaper reporting, TV and radio news reporting. Author of books which are competent as communication media but not distinguished in literary style as Level 7.

Level	Reasoning Development	Mathematical Development	Language Development
5	High school diplomas (academic or college preparatory). Some college or technical training. Carrying out rational systems of work activity (as bookkeeping, plumbing, nursing, farm management, electric wiring systems, internal combustion engines). Social development involving ability to deal with others according to well established principles of appropriate behavior, as the Doctor's Assistant, Labor Foreman, Social Secretary, Butler, or Insurance Agent.	High school, college, apprentice, technical school, or other courses with good grades in mathematics, such as higher arithmetic, algebra, geometry, trigonometry. Work involving standard applications of such mathematics, as Machinist, Statistical Clerk, Actuarial Clerk.	High school or college achievement in English, languages, and literary subjects. Work or spare-time activity involving writing or speaking, as developing sales talks, making talks to clubs, Sunday School teaching, being local correspondent for newspaper. Composing nontechnical correspondence for club or employer.
4	High school diploma for less exacting curricula or tracks, or incomplete high school. Junior high diploma. Apply common sense understanding to solve problems in organized work activities, as a Typist, Garment Inspector, Roofer, or Hydrotherapist. Social development to regulate feelings and assume responsibility in dealing with others as a Sales Clerk, Telephone Operator or Information Clerk.	School courses and grades or work experience, or spare-time experience which demonstrate facility in dealing with fractions, decimals, and percentages.	Be able to explain merchandise as a Salesperson of millinery or shoes or give information as a Receptionist. Copy verbal material from one record to another, catching gross errors in grammar. Compose routine letters.
3	Elementary school completion. Some high school. Apply common sense understanding to carry out standardized duties as on an assembly line or domestic work. Social development to regulate personal feelings, in dealing with others as Waitress or Tourist-Camp Attendant.	Ability to add, subtract, multiply, and divide whole numbers, as evidenced by school and course grades, or work experience and spare-time activities involving such skill.	Be able to converse with customers, as a Waiter discussing menu or service, or as an Usher giving information in a theater. Write receipts for payment of money. Read checks, menus, sales slips. Copy verbal records accurately.
2	Ability to carry out one- or two-step written or oral instructions, as a Candy Packer or Sack Sewer. Social development to adjust to organized work activity, as an Offbearer in a factory or construction gang.	Ability to perform simple adding and subtracting, so that can change money and keep very simple production records.	Be able to sign name and understand what is being signed. Read simple lists, addresses, safety warnings.
1	The worker need not be able to speak, read, write, or count. He is not required to adjust to an organized social environment. He needs only ability to understand very simple instructions given orally or by demonstration to carry out such tasks as pulling weeds from a lawn, shoveling coal into a bin, or assisting another person in some task as unloading furniture or crates.		

SECTION II - SPECIFIC VOCATIONAL PREPARATION (SVP)

DEFINITION

Specific Vocational Preparation is the amount of time required to learn the techniques, acquire information, and develop the facility needed for average performance in a specific job or type of work. The training may be acquired in a school, work, or avocational environment. It does not include the orientation training which is required of even the fully qualified worker to become accustomed to the special conditions of a new job. It does include training given in any of the following circumstances.

(a) Vocational education (such as high school commercial or shop training, technical school, art school, dancing and music lessons, and that part of college training which is organized around a specific vocational objective): Training conducted in school which prepares the individual specifically for an occupation or group of similar occupations.

(b) Apprentice training: A more or less well-defined combination of training courses (consisting of vocational and related subjects) and supervised practice, at the conclusion of which the worker is considered a journeyman in an occupation of rather well-established standards of preparation.

(c) In-plant training: Training given or sponsored by an employer either on or off his own premises intended as preparation for a specific job or group of jobs in his plant, when such training occurs in the form of an organized curriculum or plan of study.

(d) On-the-job training: Serving as a learner or trainee on a job, usually under the instruction of a qualified worker, for a period of time until production or proficiency standards have been met.

(e) Avocational training: Training acquired in the pursuit of an avocation which prepares a person in physical and mental skills applicable to a specific occupation or type of work.

(f) Essential experience in other jobs: Serving in less responsible jobs which lead to the higher grade job, or serving in other jobs which qualify.

(g) Other: Training acquired in military service, in institutions (e.g., corrective institutions or hospitals), or by television, correspondence, etc.

Specific Vocational Preparation can be evaluated and summarized in terms of the following time scales:

Level 1 - Short demonstration only
2 - Anything beyond short demonstration up to and including 30 days
3 - Over 30 days up to and including 3 months
4 - Over 3 months up to and including 6 months
5 - Over 6 months up to and including 1 year
6 - Over 1 year up to and including 2 years
7 - Over 2 years up to and including 4 years
8 - Over 4 years up to and including 10 years
9 - Over 10 years

STANDARDS FOR EVALUATING SPECIFIC VOCATIONAL PREPARATION

In evaluating specific vocational preparation information, the following are suggested equivalents:

(a) On-the-job training, in-plant training, and essential experience in other jobs, year for year.

(b) Vocational education of a college or technical nature (such as graduate training or purely technical training) - 30 semester hours equivalent one year SVP.

(c) Combination curricula, such as Education or Engineering major in college, where much of the time is spent on related and general subjects, one-half GED and one-half SVP.

(d) Apprenticeship training - evaluated in terms of years, e.g., 4 years apprentice training, 4 years SVP.

(e) High school shop or commercial training, which usually is considerably less intensive than apprentice or commercial school training, 30 semester hours equivalent 15 hours SVP.

(f) Liberal Arts major in college, GED only.

SOURCES OF INFORMATION ON SPECIFIC VOCATIONAL PREPARATION

Sources of counselee information for appraising SVP are:

1. Vocationally directed subjects and courses in high school and college.

2. Vocational courses and achievements in technical schools, hospitals (as nursing), art schools, commercial schools, and the like.

3. Vocational training through correspondence courses, educational TV, extension courses, etc.

4. Formal or informal apprenticeship.

5. Organized in-plant training (under supervision of qualified worker).

6. Special organized courses given by insurance companies, the government, or other organizations for their personnel.

7. Progressively responsible jobs in direct occupational line or field of work.

8. Jobs which are partially qualifying for a related line of work (as a statistical clerk or research assistant who may be partially qualified to move into a related field).

9. Training acquired as part of military service, such as for Hospital Corpsman, Aviation Machinist's Mate, or Radio or Wireless Operator.

10. Trades or vocations learned in a corrective institution.

11. Job experience or formal training acquired in a hospital, as part of treatment, or in connection with convalescence.

12. A skill learned as a hobby, or a club project, performing volunteer services, or similar.

Intensive courses: There are some exceptions to the formula for evaluating training in school vs. training on the job (page 63). For example, very intensive vocational training of the school-room type may be provided by one of the military establishments, or other organization. In many cases, the amount of time spent on the subject matter does not mean very much. Instead we can accept the standards for completing the courses successfully. There may be other exceptions in which school course work is very intensive. The counselor must use his judgment in such cases.

COUNSELOR'S GUIDE TO THE USE OF APTITUDE INFORMATION RESOURCES

EMPLOYMENT COUNSELOR'S GUIDE TO USE OF APTITUDE INFORMATION RESOURCES

FOREWARD

The purposes of this Counselor's Guide to the Use of Aptitude Information Resources are as follows:

1. To facilitate the use of the OAP's in vocational development counseling as related to the work fields contained in the OGA's of the third edition of the Dictionary of Occupational Titles. As aids to this, the following material is included as appendices to this Guide.

   a. The 36 OAP's with the related occupations subgrouped according to the OGA's of the DOT.

   b. For each 2-digit Occupational Division of the DOT, a listing of all OAP's which contain jobs falling in that Division.

   c. An alphabetical listing of all jobs in the OAP's with the OAP number indicated.

2. To present the rationale for the use of the aptitude profiles in the Worker Traits Arrangement of the DOT so that the counselor can better understand the concepts which underlie the aptitudinal analysis of occupations and obtain more insight into some of the problems he may encounter when confronted with seemingly conflicting aptitudinal information in sources such as the OAP's, WTA aptitude profiles, Armed Forces aptitude information, and other.

3. To deal with some of the broader problems in the use of aptitudinal information resources, such as use of test information as a source of clues for purposes such as remedial training and occupational exploration, particularly for the 20,991 occupations defined in the DOT not covered directly or indirectly by OAP norms.

Table of Contents

Background Information 69
Employment Service Tests 70
Rationale of GATB Norms and Specific Battery Norms 71
Rationale Underlying Aptitudinal Analysis of Occupations 72
Aptitude Information Contained in the Worker Traits Arrangement of the DOT 74
Definitions of Aptitude Concepts - As Seen in People and As Seen in Work Activities. . . . 75
Concept of Aptitude Levels 76
Concept of Significant Aptitudes 77
Explanatory Charts 78
Counselor's Approach to the Use of Aptitude Information. 81
Broadened Utilization of Test Results. 81
Criterion of "Least Discrepancy" -- Use of WTA Aptitude Profiles 82
Understanding of a Job in Depth -- Automobile Mechanic 83
Concept of Automobile Mechanic on Which OAP Norms Were Standardized. 85
WTA Aptitude Profiles for Various Levels in an OGA -- Automobile Helper
Automobile Mechanic, and Automobile Mechanic Foreman 86
. 87
Appendices:. 88
1. The 36 OAP's with Jobs Grouped According to the OGA's in the DOT 144
2. OAP's Listed for the 2-Digit Occupational Divisions of the DOT 152
3. Alphabetical Listing of Jobs in the OAP's with the OAP Numbers Indicated 152

BACKGROUND

Aptitude is generally thought of as an ability or other characteristic, physical or mental, native or acquired, known or believed to be indicative of an individual's capacity or potentiality to learn some particular knowledge or skill. Capacity cannot be directly measured. It is inferred from ability, which likewise cannot be measured. Ability itself is inferred from performance, which can be measured by means of appropriate objective tests. The basic condition for the validity of such inferences is comparability of opportunity and motivation of testees. The results will be meaningful to the extent that the individuals from whom they are secured have had like opportunity to learn the kinds of information involved in the tests. Aptitude and general ability tests differ from achievement tests in that they attempt to draw upon common understanding of performance capability developed without conscious effort on the part of the individual. Achievement tests attempt to measure much more directly the outcome of specific in-training instruction.

The important thing about aptitude tests is their meaning in the context of the particular use to which they are being put. When aptitude testing is done for an employer or personnel department in connection with employee selection, its purpose is actuarial in order to reduce the employer's risk of hiring poor workers or to increase the likelihood that he will be able to hire workers with the highest probability of being successful.

In counseling, the purpose of aptitude testing is for the benefit of the counselee himself. There are a number of ways in which a counselee may be aided by aptitude test information. Aptitude tests in general have been found to be much more valuable in providing a good basis for choice among occupations than they have in predicting success within an occupation. In vocational choice, the counselee is greatly concerned with evaluating and comparing different kinds of occupations in relation to himself. It is from the standpoint of their diagnostic value that aptitude tests can be of perhaps the greatest value to the counselee. If he has particular inadequacies in relation to an occupation he has in mind, tests can show that. They can provide a basis for verifying intuitive feelings he may have about what he thinks his strong points are, or they may dispel unnecessary doubts which he has. Aptitudes relate to learning capacity and to speed with which learning may take place. The counselee may need to think about himself from this standpoint. For instance, a person with high aptitudes utilized in typing might progress from one speed test to the next more rapidly, and hence complete the course quicker than the person with low scores in the aptitudes utilized in typing. Yet the two people can end up with equal job proficiency. Another counselee might be interested in an occupation which required numerical ability. Even though his numerical aptitude was found to be weak when tested, this does not have to be a permanent hurdle or cut-off for him. The information can be used diagnostically and lead to planning for special training courses to bring the arithmetic ability up

to what he needs for the occupation he has in mind.

The abilities of people may be estimated by the counselor on the basis of appropriate evidence. Writing ability may be inferred from successful paid writing experience; verbal ability from good grades in English; spatial ability from a developed skill in mechanical drawing. The inference can properly be drawn that if the person has succeeded in acquiring the skills which rest upon such abilities, then he can draw upon such abilities to acquire related skills in other learning situations. Work experience, education, and leisure pursuits can all be considered important sources of evidence as to the skills, knowledges, and abilities which a person possesses. However, no counselor or skilled psychometrist could estimate the test results or scores which a person might achieve on objective tests designed to measure an individual's possession of, or ability to acquire, such knowledge and skills.

Employment Service Tests

The Employment Service has developed standardized tests designed to measure potentiality for acquiring skill in an occupation and trade or proficiency tests designed to measure skills already acquired. The General Aptitude Test Battery is designed as a tool for counselors to use with applicants to help them determine the kinds of work which are suitable for their abilities. It consists of 8 pencil-and-paper tests and 4 apparatus tests. The battery measures 9 aptitudes which have been found important for success in a variety of occupations. These 9 aptitudes are: intelligence, verbal aptitude, numerical aptitude, spatial aptitude, form perception, clerical perception, motor coordination, finger dexterity, and manual dexterity.

General Aptitude Test Battery results will add to the counseling process in almost all cases involving vocational choice. When adjustment to the job or job situation is the problem, test information on the individual (GATB or other) may be of value as an indicator of the nature of the problem. The individual may be unhappy because his job requires aptitudes which he does not possess; conversely, he may be dissatisfied because he has strong aptitudes which he feels he would like to utilize, yet which his present occupation gives him no opportunity to use.

When the General Aptitude Test Battery has been administered and scored, the counselor will have available the counselee's aptitude profile, made up of standard scores for each of the 9 aptitudes. This aptitude profile of the counselee is of use in a variety of ways to aid the counselor in helping the counselee:

1. To understand himself better in terms of his aptitudinal strengths and weaknesses.

2. To determine whether or not he meets the qualifying scores for groups of occupations requiring similar combinations of aptitudes (Occupational Aptitude Patterns - OAP's).

3. To determine whether or not he meets the qualifying scores for certain specific occupations, some of which are grouped into OAP's.

4. To incorporate test evidence of strong aptitudinal assets he may possess into consideration of the basic vocational direction in which strong aptitudes stand a good chance of being utilized and into exploration of work fields which contain jobs utilizing such aptitudes.

5. To relate his aptitude profile to aptitude profiles appearing in the Worker Traits Arrangement of the Dictionary of Occupational Titles for the purpose of analyzing his aptitudinal strengths and weaknesses in relation to aptitude profiles which are suggestive of the abilities involved or not involved in specific kinds of jobs.

6. To provide data which can be used diagnostically as a basis for remedial activities such as training to acquire needed basic or "tool" skills or group participations which will provide developmental experiences of one kind or another.

This represents a considerable expansion over the past in the possible uses of the GATB test results. Such an expansion has come about on the one hand because of the emerging needs for different testing approaches with the environmentally handicapped and because of the new source of aptitude information which has become available in the release of the Third Edition of the Dictionary of Occupational Titles. Various technical considerations related to the different tools for relating test scores to vocational ends must be understood by the counselor before he can make valid interpretations. One type of tool was derived from research to establish test norms for occupations and the other from the aptitudinal analysis of occupations. The logic and the basic assumptions underlying the two approaches ask different questions and they give different answers, each useful and valid in the context of its own purpose. But to accept the answers yielded by the two approaches as if they were answers to the same questions would result in invalid conclusions.

Rationale of GATB Norms and Specific Battery Norms

USES test research in the years immediately preceding and during World War II resulted in the development of a considerable number of specific test batteries for individual occupations. These tests proved very useful in selecting applicants for industry and defense training. The next step was the development of the General Aptitude Test Battery, a tool designed for the use of counselors, which measures the individual's potential for acquiring skill in a wide range of occupations. The aptitude scores involved in the GATB are standard scores based on scores on the same tests obtained from a general working population sample of 4,000 persons. The distribution of each aptitude has been standardized with a mean of 100 and

a standard deviation of 20. This has resulted in the establishment of test norms involving a critical or minimum qualifying score on each key aptitude involved in a pattern of "significant aptitudes." In this frame of reference an applicant is considered qualified aptitudinally only if he meets the minimum score on each of the key aptitudes in the given set of norms.

These tests have provided savings to employers because on a statistical basis they reduce training and turnover costs due to poor selection and in increased production through hiring of persons more likely to be efficient workers. Because of the large number of variables attending human behavior, however, the meaning of test results obtained on any individual cannot be regarded as certain. High scores do not guarantee success, for there are always some individuals with high scores who are not successful. Low scores do not mean for any particular individual that he may not succeed, for always some of the successful workers in any test development sample are low scores.

In developing aptitude tools of this type, these questions are asked, "What are the aptitudes which have predictive validity for this job? Upon what aptitudes can we predict that selection will result in success in acquiring the skill involved in the occupation? What aptitudes, and in what amount, will bring into the occupation those workers who will probably be successful in acquiring the skill?" These questions are answered on the basis of test scores.

Limiting consideration of aptitude test results to this single application, however, severely limits their potential usefulness. A counselee might not ask the question, "What abilities do I have which make me a good risk for such-and-such an occupation?" He might rather wonder and ask, "I have such-and-such abilities. What occupations are most suitable for me? Where can I make use of these abilities? What are my weak points?"

Rationale Underlying Aptitudinal Analysis of Occupations

GATB aptitudes are defined as abilities and ordinarily the hypothesis is made that the aptitude which corresponds to the ability will be "significant" for job success, but this is not necessarily so. It may turn out that Aptitude A does not relate most "significantly" to ability A in terms of predictive validity. It may turn out that Aptitude B relates most "significantly" to ability A. An example of this is the Stocking Inspector, whose OAP norms involve clerical perception but not form perception, which is the ability the worker uses on his job. The counselee could wish to utilize his aptitudes in jobs where such aptitudes or abilities are used but have not been found statistically significant as discriminating criteria between good and poor workers, in which case, they do not show up in an OAP.

Other factors may need consideration by the counselor. Only three aptitudes are used in an OAP and only 3 or 4 in a SATB, but other aptitudes of almost equal importance may not be evident because they are not a part of the pattern. It may be that

aptitudes with high means and low sigmas are not included in an OAP or a SATB because they are characteristic of everybody in the occupation and hence not considered discriminating between good and poor workers. Examples of this are the physician and the engineer, indicated by USES test research to have very high mean scores on verbal ability. Verbal ability is judged to be critical for these occupations by educators but it is not discriminating, according to USES test research, between the good and poor candidates for these professions.

The two cases cited above show the need of a broadened base for the utilization of aptitude information. In the case of Stocking Inspector, the worker uses form perception as an ability to perceive pertinent detail while examining stockings for defects such as drops, pullers, snags, knitting and seaming defects. However on the basis of mean scores, standard deviations, correlation with the criterion, job analysis data and their combined selective efficiency in relation to the sample on which the test was standardized, and in terms of its particular educational attainment, clerical perception was selected over form perception for inclusion in the norm pattern for Stocking Inspector. Clerical perception appears to deal with materials emphasized in formal education while the tests that measure form perception deal with materials to which little or no school time is devoted.

The counselor must be cognizant of the sociological implications of situations of this type and capable of making the professional judgments appropriate and sound in terms of the individual's needs. From the standpoint of the employer, less risk may be attached to his hiring of trainees for Stocking Inspector if they are selected on the basis of high scoring in clerical rather than form perception, even though form perception, and not clerical perception, is the ability utilized in the job. However, from the standpoint of disadvantaged populations consisting of individuals who may not, because of lack of formal schooling, be high scorers on clerical perception but at the same time are high scorers on form perception--the ability they would use as Stocking Inspectors--it is highly desirable to be able to ask the question, "How can this aptitude of form perception be utilized?" and consider the Stocking Inspector as one answer. This approach permits a "selecting-in" rather than a "selecting-out."

Taking the person with a high verbal aptitude and wishing to know occupations which are high utilizers of this ability, he might be told by the counselor of the court reporter who takes verbatim all types of language at a very rapid speed or the continuity clerk who writes synopses of movie scripts. The counselee who is a would-be stenographer might receive educational guidance as to the desirability of acquiring a good vocabulary, learning to speak English well, and achieving competency in grammar and good English usage. However, the high V score does not contribute evidence toward this objective if considered only in relation to the OAP norms for stenographer, court reporter, or continuity clerk which are comprised of just the three aptitudes, Intelligence, Motor Coordination, and Clerical Perception.

Clearly these situations reveal a need for using aptitude information to help the counselee understand himself in terms of the make-up of his abilities as they relate to the overall pattern of abilities utilized in an occupation, not just those three aptitudes most discriminating in separating good from poor workers. The counselee's self-understanding in relation to an occupation can come about as he understands his total make-up of strengths and weaknesses.

Aptitude Information Contained in the Worker Traits Arrangement of the DOT

Aptitude information, derived from the aptitudinal analysis of occupations, is provided in the Worker Traits Arrangement of the DOT. In the WTA profiles, important aptitudes are revealed not pragmatically but logically. Aptitudes are identified only through abilities which are used in performing the job and not by test scores of successful workers. No aptitude is considered important if the aptitude cannot be described as abilities which are exercised in job performance. Although studies have shown that raters cannot estimate what tests would be valid for a job, raters can estimate aptitude or ability concepts which apply. In this approach to aptitude analysis, form perception is found to be important for the Stocking Inspector because the Stocking Inspector uses form perception, verbal is important to the engineer and physician because they use verbal, and it is also important for the stenographer because she uses verbal. As the aptitude data in the WTA's are based on a different logic from that contained in the OAP's, the information in the OAP's and the WTA profiles do not approximate each other.

The aptitude information in the Worker Traits Arrangement is presented in the profiles consisting of all the 9 aptitudes of GATB plus eye-hand-foot coordination and color discrimination.

The aptitude concepts as seen in people are regarded as specific capacities and abilities required of an individual in order to learn or perform adequately a task or job duty. When these aptitude concepts are considered in relation to jobs, they are seen as aspects of work activities requiring certain capabilities on the part of a worker.

Although couched in different phraseology, the use of common concepts to evaluate people and jobs makes it possible to evaluate workers and jobs in the same qualitative terms. The counselor, to help the counselee not only to understand his aptitudinal strengths and weaknesses, but to understand them in relation to occupational fields and individual jobs, needs a thorough grasp of aptitudinal concepts as observed in people on the basis of test results. He needs in addition the ability to visualize jobs in the same terms.

Of the nearly 22,000 separate occupations in the third edition of the DOT, only about 750 occupations are contained in the OAP's. The counselor is constantly faced with the problem of trying to reason from the occupations listed in the OAP's to establish additional occupational relationships which may be helpful in vocational exploration with his counselee.

Another situations which besets the counselor is the problem of using national testing norms in relation to the very particular circumstances of local industrial practices and local population cultures. One of the counselor's most effective tools in coping with these demands upon his capacity for sound professional judgment is his ability to understand jobs aptitudinally and

their variables from the standpoint of aptitude requirements. His skill in interpreting test results of the individual is productive to the extent that he is also capable of understanding jobs in aptitude terms.

Definitions of Aptitude Concepts - As Seen in People and As Seen in Work Activities

The definitions of the aptitude concepts as used in the DOT are listed below. Each GATB aptitude (except G Intelligence) is defined first as it is seen in people. Following that definition is an example of the aptitude as seen in relation to work situations.

G. INTELLIGENCE: General learning ability. The ability to "catch on," or understand instructions and underlying principles. Ability to reason and make judgments. Closely related to doing well in school.

V. VERBAL: Ability to understand meanings of words and ideas associated with them, and to use them effectively. To comprehend language, to understand relationships between words, and to understand meanings of whole sentences and paragraphs. To present information or ideas clearly.

Example in work situations: Consider reading comprehension required to master texts used in training and reference materials used in work process; presentation or understanding of oral or written instructions or specifications, mastery of technical terminology that is necessary.

N. NUMERICAL: Ability to perform arithmetic operations quickly and accurately.

Example in work situations: Consider in relation to situations in which change is made, time or production records kept, geometric patterns laid out, things weighed, accurate measurements made, or numerical entries made or checked. Consider the speed and continuity of the numerical operation as well as the complexity of the operation.

S. SPATIAL: Ability to comprehend forms in space and understand relationships of plane and solid objects. May be used in such tasks as blueprint reading and in solving geometry problems. Frequently described as the ability to "visualize" objects of two or three dimensions, or to think visually of geometric forms.

Example in work situations: Consider such activities as laying out; positioning and aligning objects; observing movements of objects, such as vehicles in traffic or machines in operation, and comprehending how the movements affect their spatial position; achieving balanced design; and understanding and anticipating the effects of stresses in structual situations.

P. FORM PERCEPTION: Ability to perceive pertinent detail in objects or in pictorial or graphic material; to make visual comparisons and discriminations and see slight differences in shapes and shadings of figures and widths and lengths of lines.

Example in work situations: Consider in such activities as inspecting surfaces for consistency in coloring, scratches, flaws, grain, texture, and the like; observing lint, dust, etc., on surfaces, determining if patterns match or are correct; and recognizing small parts.

GUIDE
APTITUDE

Q. CLERICAL PERCEPTION: Ability to perceive pertinent detail in verbal or tabular material. To observe differences in copy, to proofread words and numbers, and to avoid perceptual errors in arithmetic computation.

Example in work situations: In trade and craft jobs consider the work orders, specifications, dials, guages, and measuring devices which must be read. Consider whether perceptual errors in reading the words and numbers would result in defective work. Consider when proofreading words and numbers from the standpoint of perceiving individual characters.

K. MOTOR COORDINATION: Ability to coordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed. Ability to make a movement response accurately and quickly.

Example of work situations: Consider whether hand movements are guided by concentrated visual attention. Consider whether objects are guided into position or parts are assembled.

F. FINGER DEXTERITY: Ability to move the fingers and manipulate small objects with the fingers rapidly or accurately.

Example in work situations: Consider finger movements. Consider when bolts and screws are handled; small tools, machine controls, and the like are manipulated; musical instruments are played; and fine adjustments and alignments are made to instuments and machines.

M. MANUAL DEXTERITY: Ability to move the hands easily and skillfully. To work with the hands in placing and turning motions.

Example of work situations: Consider when hand and wrist movements are involved in placing and turning motion in pushing and pulling activities.

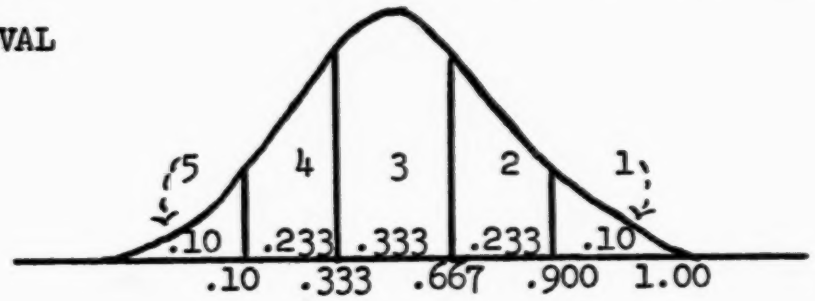
E. EYE-HAND-FOOT-COORDINATION: Ability to move the hand and foot coordinately with each other in accordance with visual stimuli.

C. COLOR DISCRIMINATION: Ability to perceive or recognize similarities or differences in colors, or in shades or other values of the same color; to identify a particular color, or to recognize harmonious or contrasting color combinations, or to match colors accurately.

Concept of Aptitude Levels

The aptitudes are indicated by digits that indicate how much of each aptitude the job requires for satisfactory (average) performance. The average requirements, rather than maximum or minimum, are cited. The amount required is expressed in terms of equivalent amounts possessed by segments of a five-point scale of a hypothetical general working population. The assumption is made that the distribution of aptitudes follows a normal curve. The five rating intervals may be defined in terms of the proportionate segments of the normal curve that they occupy, as shown on the following page.

RATING INTERVAL



The cumulative proportions are shown along the base line.

In the DOT, these concepts of rating intervals have served as a basis for a scale of five levels. These levels are defined below.

1. The top 10 percent of the population. This segment of the population possesses an extremely high degree of the aptitude.

2. The highest third exclusive of the top 10 percent of the population. This segment of the population possesses an above average of high degree of the aptitude.

3. The middle third of the population. This segment of the population possesses a medium degree of the aptitude, ranging from a slightly below to slightly above average.

4. The lowest third exclusive of the bottom 10 percent of the population. This segment of the population possesses a below average or low degree of the aptitude.

5. The lowest 10 percent of the population. This segment of the population possesses a negligible degree of the aptitude.

These levels may be related to test scores as follows:

Level	Corresponding Test Score
1	126 and above
2	109 - 125
3	92 - 108
4	74 - 91
5	Below 74

Concept of Significant Aptitudes

In the WTA certain aptitudes appear in boldface type on the qualifications profiles for the worker traits groups. These aptitudes are considered to be occupationally significant for the specific group; i.e., essential for average successful job performance. All boldface aptitudes are not necessarily required of a worker for each individual job with a worker trait group, but some combination of them is essential in every case.

The charts which follow are designed to clarify some of the concepts which have been described:

1. Concept of "above average," "average," and "less than average" performance, as exhibited in job of STENOGRAPHER.

2. WTA Scale of Levels and Corresponding Aptitude Range of Scores.

3. GATB versus WTA - Contrast in application of test results for Aptitude G (Intelligence) in relation to job of STENOGRAPHER.

4. Contrast of OAP's and WTA profiles from standpoint of aptitudinal picture given of a job: STENOGRAPHER

Concept of "above average," "average," and "less than average" performance, as exhibited in job of STENOGRAPHER	
	Above Average Example: Court reporter taking court proceedings at 250 or more wpm OR legal or technical stenographer required to master a technical and difficult vocabulary OR other stenographer required to have a high degree of skill in setting up difficult formats, supplying missing words by inference from context, etc.
	Average Example: The average performance of the typical or usual stenographic job, taking dictation at speeds ranging from perhaps 80 to 120 wpm. Vocabulary and formats involved are of average difficulty.
	Less than Average Example: Stenographer in small office required to take slowly spoken dictation (50 to 75 wpm). Routinized vocabulary and standardized formats involved.

(1)

(3) GATB versus WTA

Contrast in Application of Test Results for Aptitude G (Intelligence) in Relation to Job of STENOGRAPHER

(2) WTA SCALE OF LEVELS AND CORRESPONDING APTITUDE RANGE OF SCORES

	GATB	WTA
WTA Level 1 Upper 10% of population. Scores of 126 and above.		
WTA Level 2 Upper third, less upper 10%. Scores 109-125.		
WTA Level 3 Middle third. Scores 92-108 "average" or "mean" Score 100	GATB G score of 105, the "cut-off" or minimum established for stenographer. This stenographer is able to pass dictation test at 80wpm. Norm of G-105 excludes 60% of population.	The lower limit of WTA Level 3 corresponds to a test score of 92. Within this level range falls the "average" performance of the stenographer in the typical or usual stenographic job. One third of the population falls below this level.
WTA Level 4 Lower third, less lower 10% Scores 91-74.		
WTA Level 5 Lower 10%. Scores below 74.		

(4) Contrast of OAP's and WTA Profiles from Standpoint of Aptitudinal Picture Given of Job

EXAMPLE: Stenographer

OAP

Statistically derived pattern isolates three aptitudes considered most efficient in distinguishing good from poor workers.

G - Intelligence
Q - Clerical Perception
K - Motor Coordination

WTA

WTA through aptitudinal analysis of occupations gives an aptitude profile suggestive of the pattern of abilities which the stenographer uses in performing the stenographic job. This pattern, for stenographer, includes the three aptitudes of G, Q, K included in the OAP, and in addition V, P, and F.

V, P, and F are seen as being used by the stenographer in the following ways:

Verbal (V) to have a sense of appropriateness or inappropriateness in words and sentences; capacity for phonetic association to take dictation efficiently; and skill in supplying missing words by inference from context.

Form Perception (P) in reading shorthand notes, in which meaning derives from slight differences in abbreviated symbols. Rapid and reliable perception of such slight differences is required in order that meaning be accurately and rapidly extracted.

Finger Dexterity (F) to move fingers rapidly when taking dictation and typing.

COUNSELOR'S APPROACH TO THE USE OF APTITUDE INFORMATION

Broadened Utilization of Test Results

The Manual for the General Aptitude Test Battery, which replaces the Guide to the Use of the General Aptitude Test Battery, helps the employment service counselor relate the counselee's GATB results to OAP norms. Various procedures for the counselor's use of aptitude test information are provided in the ES Manual. The use of nonreading tests and related achievement tests by the counselor are covered by special instructions which are not repeated in this Guide.

The guidelines included here are to assist the counselor

1. in interpreting the GATB results on the counselee to the best advantage of the counselee in situations where test results may be used as clues to help the counselee diagnostically rather than as strict measurements data

2. in evaluating the counselee and the job aptitudinally in the same qualitative terms for the purpose of aiding the counselee relate to all feasible occupational possibilities.

This broadens the use of the GATB results in two ways:

1. from the standpoint of what aptitude test results mean in terms of the individual taking the test and

2. what aptitude requirements mean from the standpoint of a job.

From the standpoint of the person (1), the point of view is that human beings develop with life, educational, and occupational experiences; hence, inadequacies revealed by test results may be the basis for diagnostic services provided by the counselor to aid the counselee in self-improvement to increase his employability and the quality of his life. The counselor can assist the counselee explore possible ways of utilizing his measured aptitudes in a positive way, rather than solely in the more negative sense of "passing tests."

The counselor uses his professional judgment in utilizing the GATB results for diagnostic purposes. It is relatively uncomplicated to make a judgment from a test score that the counselee appears underdeveloped in an ability such as numerical and to help him make plans for remedial training. However, the situation is not always simple. The counselee may or may not have the capacity to improve his numerical ability with training. Aptitudes, such as form perception, which are apparently little related to the kinds of learning to which school time is devoted, when weak, are not so readily thought of in terms of remedial training.

The professional counselor does not assign a meaning to a test score apart from the total circumstances of the counselee any more than a physician assigns absolute meaning to a blood pressure reading or considers it except in the context of the case history and the prevailing environmental circumstances.

The test score is indeed a "fragment of a picture," which to be seen whole must encompass sociological, cultural, economic, physiological, and other factors.

From the standpoint of the aptitudinal requirements of the job (2), the changed approach permits the

consideration of distinctions in the amounts of aptitudes actually required by jobs. These distinctions can be assumed from the fact that jobs are not static; they are variable, and performed on several levels of competency which vary with the content of tasks and responsibilities. Many of the most pressing problems which the counselor faces in relation to testing stem from his lack of specific knowledge regarding the actual critical aptitude requirements of jobs, in a particular locality, or employment setting. He may find the conflicting information he is exposed to about aptitudinal requirements of occupations confusing, e.g., GATB, WTA profiles, Armed Forces aptitudinal information.

The counselor is also beset with the problem of using national testing norms in relation to the precise type of evaluation he may need to make of the unique individual and the specifics of the local employment situation. Norms which are relevant to a local worker population and job structure are always of key importance in an employment counseling situation. Local requirements and a counselee's conception of a job may be far different from the conditions under which a test was standardized.

Criterion of "Least Discrepancy" -- Use of WTA Aptitude Profiles

Exact or "hard" knowledge about human beings and about jobs is limited. In his self-search of his abilities and their occupational significance, an individual usually does not find an open-and-shut solution. He accepts probability. Even if aptitude norm information were not affected by the variability of jobs and local situations, the problem remains that only 751 out of 21,741 jobs in the DOT are related directly or indirectly to OAP's. Even under a strict "matching-man-and job" concept, by necessity the "match is often on a basis of "least discrepancy."

All jobs in the third edition of the DOT are related to the aptitude profiles in the WTA, although the most that can be said is that "All boldface aptitudes are not necessarily required of a worker for each individual job within a worker trait group, but some combination of them is essential in every case."

This statement may give an impression that the WTA profiles are very imprecise; however, a constructive point of view about the WTA profiles is that they encourage creative, rather than mechanical, job search. The profiles are not based on statistical criteria, and are surrounded by no mystique except the requirement for careful reasoning in their application.

The important point is that the GATB scores on individuals can never be related to the WTA aptitude profiles as if the WTA aptitude profiles were norms. They are not norms and they are not convertible to pseudonorms. The WTA profiles are information about jobs. Using the profiles involves the same type of logic as when one reasons that because a person has good school grades in English he might utilize the ability (verbal) in a job such as an editorial clerk, which would make demands on the same type of abilities that enabled the person to obtain the good English grades.

The principles which have just been explored in this Guide will not be reduced to a mechanical procedure. However, to demonstrate these problems and some principles for dealing with them, a concrete example, the job of the ubiquitous automobile mechanic will be considered in depth.

The counselor seeks a complete picture of the individual, not one consisting of a few segmented elements. As a corollary, the counselor cannot assist the whole individual intelligently in vocational planning with a view of an occupation which is limited and fragmentary.

AUTOMOBILE MECHANIC

The job of automobile mechanic can be viewed from several vantage points. It can be viewed as a job for which OAP norms and SATB norms are established. In this case, the job requires of the aspirant that he achieve, as a minimum, the following GATB scores:

G - 95 S - 85 F - 75

From this point of view, an individual interested in becoming an automobile mechanic qualifies only if he equals or exceeds each minimum aptitude score in the pattern. With a score of 74 on finger dexterity, such an individual would fail the OAP. He might achieve high scores on other aptitudes; for instance, a score of 107 on manual dexterity.

However, this high score on manual dexterity would not influence his OAP qualifications for automobile mechanic. The OAP norms, involving the use of the multiple cut-off method with a critical score on each significant aptitude, do not permit a deficiency in one significant aptitude to be compensated for by a superabundance of another as does a test involving a total weighted score.

If the job of automobile mechanic is viewed from the perspective of the WTA aptitude profile approach to aptitudinal qualifications for a job however, then this individual might come within the qualification range established for jobs of the automobile mechanic type.

The applicable WTA aptitude profile for automobile mechanic includes the following significant aptitudes which are viewed as being significantly involved in some combination in the average performance of the typical job of automobile mechanic.

Aptitudes	G	N	S	P	K	F	M
Level	3	3	2	3	3	3	3
Ranges	2	4	3	4	2	2	2
		2		2			

This aptitudinal picture of the job of automobile mechanic, it can be seen, includes a greater number of aptitudes than does the OAP. The lower limits of the ranges of some of these aptitudes are below the OAP norm cut-off scores; on some, the lower limits of the ranges are above the OAP norm cut-off scores.

Understanding the Job of Automobile Mechanic in Depth

The counselor, to assist the counselee creatively in relating his aptitudinal assets to vocational possibilities, must be able to consider jobs in depth. The counselee's concept of automobile mechanic, for example, must be taken into account and the job he visualizes as his occupational objective compared with the job of automobile mechanic, on which the OAP norms were standardized

The course work upon which the grades were based covered: shop; related drawing, including blueprint reading and mechanical drawing; mathematics, including algebraic operations and trigonometric functions; related science; and certain academic courses including English, history, and economics.

In the course of the test development research, the course content was analyzed aptitudinally as follows: Intelligence is involved in application of mathematics to trade problems and in ability to use trade terms and manuals, and in related science as well as success in the more academic phases of the course. Numerical ability is found to be important in mechanical drawing, perspective drawing, and visualizing wiring set-ups and overall engine construction, and in making various adjustments. Form perception is found to be involved in accuracy of drawings, in comparing lengths of wires and in selection of proper tools and parts. Finger dexterity is found to be involved in electrical wiring and testing, adjusting ignition, and in use of bolts. Manual dexterity is considered important in collision and body repair, machine work, auto printing, and chassis repair.

To illustrate how tenuous is the nature of the evidence on which the absolute choice of one of two possible aptitudes -- in this case, let it be manual versus finger dexterity -- is made, consider the following research data on the two aptitudes in the study.

	M	σ	r	σ_r
Finger Dexterity	99.180	15.040	.268	.131
Manual Dexterity	102.000	16.973	-.037	.141

As can be seen the statistical evidence on the two aptitudes was close. The total course content was re-evaluated and a judgment made that the probability existed that finger dexterity was a more frequent and more significant requirement than manual dexterity. Finger dexterity was included, and manual dexterity, excluded from the OAP norms.

It can be seen that these OAP norms, when applied to the wide array of automobile mechanics, as they vary in competency and specialization, may not always result in evaluations to the best interests and inclinations of a counselee.

Before making a negative evaluation of the counselee in relation to the job of automobile mechanic on the basis of his GATB scores, the counselor can consult the WTA aptitude profiles and consider whether or not his strong aptitudes may not relate sufficiently close to the significant aptitudes in that profile, on a criterion of "least discrepancy," to see possibilities for him in the occupation in terms of some of its variations in competency.

In the economy and sociology of the labor force, the occupation of automobile mechanic is not static, consisting of one set structure of duties and responsibilities, but one with many specialties comprising the ranks of its workers, and occurring on different levels of competency.

To understand the job of automobile mechanic, the counselor will need to evaluate the counselee's qualifications in relation to it in the light of the kind of information which is sketched below:

Automobile mechanics repair mechanical, electrical, and body parts of passenger automobiles and trucks. These workers number nearly three-quarters of a million. Automobile ownership in the United States is increasing rapidly and many thousands of job openings for automobile mechanics are projected for the next decade. In the year 1964 alone, there were 175 MDT training projects for automobile mechanics, consisting of both institutional and on-the-job training.

Most automobile mechanics pick up the skills of the trade informally through on-the-job experience, although most training authorities recommend the completion of a 3 or 4-year formal apprenticeship period. Many public high schools and vocational schools offer courses in automobile mechanics. The Armed Forces train men in automobile repair and also make available through the United States Armed Forces Institute, correspondence courses to interested service men.

The automobile mechanic may be engaged in all-around automobile repair or he may specialize in one phase of it. For example, one mechanic may be chiefly engaged in disassembling, overhauling, reassembling, and adjusting engines, rear ends, clutches, transmissions, etc. Such a mechanic may use complex machinery such as wheel alinement machines and wheel balancers; engine analyzers; and brake testers. He may use lathes, shapers, drill presses, and welding equipment to rebuild parts. This mechanic spends much time in grasping various hand tools and holding assembly units in place in the installation process. It is easy to see that such activities require manual dexterity and the counselor is not surprised to see that manual dexterity is mentioned in various sources (Armed Forces occupational and test information, occupational guides, etc.) as a requirement for automobile mechanic.

Another automobile mechanic may be engaged for most of his time using his hands and small hand tools to do work such as repairing car electrical systems and replacing broken parts such as piston rings and bearings. It is easy to see that the nimble finger movements which he must repeatedly make throughout the day require finger dexterity.

Concept of Automobile Mechanic on Which OAP Norms Were Standardized

The OAP norms for automobile mechanic were standardized on 50 seniors in the Brooklyn High School of Automobile Trades. The norms chosen for their selectivity and discriminating power did not actually relate to a criterion derived from job performance but from student performance, i.e., grades. Students were divided into a high criterion group, designated as "good students," and a low criterion group, designated as "poor students." The criterion used consisted of the average of shop and theory grades received for one (the last) term's work. (Shop grades emphasize skill in performance and application of rules, while theory grades reflect success in grasping principles and assimilating knowledge.)

GUIDE
APTITUDE

The Worker Trait Arrangement Profiles also permit an aptitudinal evaluation of jobs on different levels within a field of work (OGA). This is shown in the opposite column for 620 Motorized Vehicle and Engineering Equipment Repairing.

620.131 Automobile Mechanic, Foreman

GVN	SPQ	KFM	EC
333	334	333	54
	22	22	35

620.281 Automobile Mechanic

GVN	SPQ	KFM	EC
333	234	333	55
244	342	222	4
2	23		3
			2

620.384 Motor Adjuster

GVN	SPQ	KFM	EC
333	333	333	53
4	24	444	4

620.884 Automobile Mechanic, Helper

GVN	SPQ	KFM	EC
344	435	333	55
4 5	344	444	44
			3

APPENDICES:

1. The 36 OAP's with Jobs Grouped According to the OGA's of the DOT.

2. OAP's Listed for the 2-Digit Occupational Divisions of the DOT.

3. Alphabetical Listing of Jobs in the OAP's with the OAP Numbers Indicated.

OCCUPATIONAL APTITUDE PATTERNS

Jobs Grouped by Occupational Group Arrangement of
Dictionary of Occupational Titles

OAP-1

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence)	125	120	117
N (Numerical Aptitude).....	115	109	107
S (Spatial Aptitude.....	115	113	110

00
01 OCCUPATIONS IN ARCHITECTURE AND ENGINEERING

*003.081 Electrical Engineer, S-36
003.081 Electronics Engineer
003.081 Radio Engineer
003.081 Telegraph Engineer
003.081 Telephone Engineer
003.081 Television Engineer
005.081 Airport Engineer
*005.081 Civil Engineer, S-36
*005.081 Construction Engineer
005.081 Highway Engineer
005.081 Hydraulic Engineer
005.081 Railroad Engineer
005.081 Sanitary Engineer
007.081 Air-Conditioning Engineer
007.081 Automotive Engineer

00
01 OCCUPATIONS IN ARCHITECTURE AND ENGINEERING (Cont'd)

007.081 Design Engineer, Oil Well Equipment
007.081 Internal-Combustion-Engineer Designer
007.081 Machinery and Tool Designer
*007.081 Mechanical Engineer, S-36
007.081 Refrigeration Engineer
007.081 Steam-Distribution Engineer
007.081 Utilization Engineer
007.081 Valve-Designing Engineer
007.151 Heating Engineer
007.187 Gas-Distribution Engineer
007.187 Plant Engineer
008.081 Chemical Engineer, S-36
008.081 Combustion Engineer
*012.188 Systems Analyst, Business-Electronic-Data-Processing, S-315

020 OCCUPATIONS IN MATHEMATICS

*020.188 Programmer, Business, S-314
*020.188 Programmer, Engineering and Scientific, S-316

070 PHYSICIANS AND SURGEONS

070.101 Surgeon (medical ser.) I
*070.108 General Practitioner, S-39
Physician (Term), S-39

187 SERVICE INDUSTRY MANAGERS AND OFFICIALS

187.118 Public-Health Service Officer

199 MISC. PROFESSIONAL, TECHNICAL, AND MANAGERIAL OCCUPATIONS, n.e.c.

199.168 Urban Planner
(Was City Planning Engineer)

OAP-2

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	115	111	107
N (Numerical Aptitude).....	115	109	107
Q (Clerical Perception).....	105	101	96

020 OCCUPATIONS IN MATHEMATICS

020.188 Statistician, Applied
(Was Statistician I)

074 PHARMACISTS

*074.181 Pharmacist, S-37

160 ACCOUNTANTS AND AUDITORS

*160.188 Auditor, S-114
160.188 Accountant, Cost
*160.188 Accountant, S-114
(Was Accountant, General)

160 ACCOUNTANTS AND AUDITORS (Cont'd)

160.188 Accountant, Budget
160.188 Accountant, Public
160.188 Accountant, Tax
160.188 Accountant, Systems
(Was Accounting System Expert)
160.288 Estimator

169 OCCUPATIONS IN ADMINISTRATIVE SPECIALIZATIONS

*169.188 Underwriter, S-14

188 PUBLIC ADMINISTRATION MANAGERS AND OFFICIALS

188.188 Assessor

OAP - 3

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	110	106	102
V (Verbal Aptitude).....	105	101	97
N (Numerical Aptitude).....	105	100	98

003 ELECTRICAL ENGINEERING OCCUPATIONS

*003.181 Electronic Technician, S-293

077 DIETITIANS

*077.168 Dietitian, S-55

09 OCCUPATIONS IN EDUCATION

*091.288 Teacher, Secondary School, S-87
*092.228 Teacher, Elementary School
096.128 Home Economist

166 PERSONNEL AND TRAINING ADMINISTRATION OCCUPATIONS

*166.268 Employment Interviewer I, S-48

169 OCCUPATIONS IN ADMINISTRATIVE SPECIALIZATIONS, N.E.C.

*169.268 Claims Taker, Unemployment Insurance Benefits, S-48

187 SERVICE INDUSTRY MANAGERS AND OFFICIALS

*187.168 Director, Funeral, S-93

193 RADIO OPERATORS

*193.168 Air-Traffic-Control Specialist, Tower, S-256

195 OCCUPATIONS IN SOCIAL AND WELFARE WORK

*195.108 Case Worker, S-175
195.108 Group Worker
195.208 Case Aid

249 MISCELLANEOUS CLERICAL OCCUPATIONS, N.E.C.

*249.268 Survey Worker, S-6

338 EMBALMERS AND RELATED OCCUPATIONS

*338.381 Embalmer, S-93

91 TRANSPORTATION OCCUPATIONS, N.E.C.

912.168 Dispatcher

*919.168 Dispatcher, Motor Vehicle, S-251

OAP-4

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	105	101	98
N (Numerical Aptitude).....	110	104	103
Q (Clerical Perception).....	105	101	96

100 LIBRARIANS

*100.168 Librarian, S-299

162 PURCHASING MANAGEMENT OCCUPATIONS

162.168 Buyer, Grain I

163 SALES AND DISTRIBUTION MANAGEMENT OCCUPATIONS

*163.118 Manager, City Circulation, S-23
163.118 Manager, Sales

299 MERCHANDISING OCCUPATIONS, EXCEPT SALESMEN

299.138 Sample Distribution, Crew Supervisor

OAP-5

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	105	101	98
S (Spatial Aptitude).....	95	94	91
P (Form Perception).....	100	97	92

078 OCCUPATIONS IN MEDICAL AND DENTAL TECHNOLOGY

*078.368 Dental Hygienist, S-54

079 OCCUPATIONS IN MEDICINE AND HEALTH

079.378 Electrotherapist

828 OCCUPATIONS IN FABRICATION, INSTALLATION, AND REPAIR OF ELECTRICAL AND ELECTRONICS PRODUCTS

*828.281 Electronics Mechanic, S-103

972 LITHOGRAPHERS AND RELATED OCCUPATIONS

*972.382 Photographer, Lithographic, S-223

979 OCCUPATIONS IN GRAPHIC ART WORK

979.381 Paste-Up Man

OAP-6

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	100	96	93
V (Verbal Aptitude).....	105	101	97
Q (Clerical Perception).....	95	91	87

079 OCCUPATIONS IN MEDICINE AND HEALTH

*079.368 Psychiatric Technician, S-327

092 OCCUPATIONS IN PRIMARY SCHOOL AND KINDERGARTEN EDUCATION

092.228 Teacher, Kindergarten

168 INSPECTORS AND INVESTIGATORS, MANAGERIAL AND PUBLIC SERVICE

*168.288 Claim Examiner

206 FILE CLERKS

206.366 File Clerk I
*206.388 File Clerk II, S-38

209 STENOGRAPHY, TYPING, FILING AND RELATED OCCUPATIONS

209.588 Price Clerk

219 COMPUTING AND ACCOUNT-RECORDING OCCUPATIONS

219.388 Coding Clerk

241 ADJUSTERS

*241.168 Claim Adjuster, S-186
*241.368 Adjustment Clerk

249 MISCELLANEOUS CLERICAL OCCUPATIONS, n.e.c.

249.368 Credit Clerk I

359 MISCELLANEOUS PERSONAL SERVICES OCCUPATIONS, n.e.c.

*359.878 Teacher, Nursery School, S-47

OAP-7

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	100	96	93
V (Verbal Aptitude).....	100	97	93
Q (Clerical Aptitude).....	100	94	93

187 SERVICE INDUSTRY MANAGERS AND OFFICIALS

187.168 Manager, Recreation Establishment
*187.168 Manager, Theater, S-30

210 BOOKKEEPERS

*210.388 Bookkeeper I, S-184
210.388 Bookkeeper II

213 AUTOMATIC DATA-PROCESSING-EQUIPMENT OPERATORS

*213.382 Digital-Computer Operator, S-286

219 COMPUTING AND ACCOUNT-RECORDING OCCUPATIONS

219.388 Budget Clerk
219.488 Accounting Clerk

OAP-8

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	100	96	93
V (Verbal Aptitude).....	100	97	93
S (Spatial Aptitude).....	90	89	87

022 OCCUPATIONS IN CHEMISTRY

022.281 Chemical-Laboratory Technician

024 OCCUPATIONS IN GEOLOGY

024.381 Laboratory Assistant I

029 OCCUPATIONS IN MATHEMATICS AND PHYSICAL SCIENCES

*029.281 Chemical Assistant, S-7
029.281 Gas Tester
*029.281 Laboratory Tester I, S-7
029.281 Moisture Tester
029.281 Paint-and-Varnish Technician
029.281 Soils Tester
029.381 Laboratory Assistant
029.381 Laboratory Tester II

07 OCCUPATIONS IN MEDICINE AND HEALTH

*078.368 Radiological Technologist, S-80
*079.378 Physical Therapist, S-347

18 MANAGERS AND OFFICIALS, N.E.C.

183.118 Production Superintendent
185.168 Manager, Merchandise
*189.118 Manager, Industrial Organization, S-158

95 OCCUPATIONS IN PRODUCTION AND DISTRIBUTION OF UTILITIES

*952.782 Steam-Power-Plant Operator, S-340
*954.782 Water-Treatment-Plant Operator, S-342

OAP-9

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	95	91	88
N (Numerical Aptitude).....	90	85	83
Q (Clerical Perception).....	95	91	87

079 OCCUPATIONS IN MEDICINE AND HEALTH

*079.368 Medical Assistant, S-237

185 WHOLESALE AND RETAIL TRADE MANAGERS AND OFFICIALS

185.168 Manager, Retail Automotive Service, S-298
*185.168 Proprietor, Retail Automotive Service, S-298

205 PERSONNEL CLERKS

*205.368 Employment Clerk, S-105

209 STENOGRAPHY, TYPING, FILING AND RELATED OCCUPATIONS, N.E.C.

209.388 Reference Clerk

213 AUTOMATIC DATA-PROCESSING-EQUIPMENT OPERATORS

*213.582 Key-Punch Operator, S-180
213.588 Verifier Operator
*213.782 Tabulating-Machine Operator, S-42

216 COMPUTING-MACHINE OPERATORS

216.488 Food Checker II
216.588 Food Tabulator, Cafeteria

237 RECEPTIONISTS AND INFORMATION CLERKS

237.368 Receptionist

240 COLLECTORS

240.388 Collection Clerk

263 SALESMEN AND SALESPERSONS, TEXTILES, TEXTILE PRODUCTS, AND APPAREL

263.258 Salesperson, Orthopedic Shoes

274 SALESMEN AND SALESPERSONS, HOUSEFURNISHINGS

274.358 Salesman, Floor Coverings

280 SALESMEN AND SALESPERSONS, TRANSPORTATION EQUIPMENT

280.358 Salesman, Marine Supplies

289 SALESMEN AND SALESPERSONS, COMMODITIES

*289.358 Counterman, Automotive Parts, S-167
289.358 Salesperson, Parts
*289.458 Salesperson, General, S-276

299 MERCHANDISING OCCUPATIONS, EXCEPT SALESMEN

*299.468 Grocery Checker, S-145

329 LODGING AND RELATED SERVICE OCCUPATIONS

329.878 Attendant, Lodging Facilities

OAP-10

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	95	91	88
S (Spatial Aptitude).....	95	94	91
M (Manual Dexterity).....	85	79	76

313 CHEFS AND COOKS, LARGE HOTELS AND RESTAURANTS

313.131 Chef
*313.381 Cook, S-328
313.381 Cook, Broiler
313.381 Cook, Dessert
313.381 Cook, Fry
313.381 Cook, Pastry
313.381 Cook, Sauce
313.381 Cook, Soup
313.381 Cook, Vegetable
313.781 Pie Maker I

315 MISCELLANEOUS COOKS, EXCEPT DOMESTIC

315.381 Cook, Camp
315.381 Cook, Mess
315.381 Cook, Railroad

373 FIREMEN, FIRE DEPARTMENT

*373.884 Fire Fighter, S-120

601 TOOLMAKERS AND RELATED OCCUPATIONS

*601.381 Template Maker, Aircraft
601.381 Template Maker, Structural Steel

637 UTILITIES SERVICE MECHANICS AND REPAIRMEN

637.281 Gas-Appliance Serviceman
*637.281 Refrigeration Mechanic

638 MISCELLANEOUS OCCUPATIONS IN MACHINE INSTALLATION AND REPAIR

*638.281 Service Engineer, S-183

65 PRINTING OCCUPATIONS

*651.381 Overlay Cutter, S-40
*651.782 Cylinder-Press Man, S-40
*651.782 Engraving-Press Operator, S 40
*651.782 Offset-Press Man, S-40

65 PRINTING OCCUPATIONS (Cont'd)

*651.782 Platen-Press Man, S-40
*651.782 Web-Press Man, S-40
*659.782 Embossing-Press Operator, S-40

660 CABINETMAKERS

*660.280 Cabinetmaker, S-100

693 MODELMAKERS, PATTERNMAKERS, AND RELATED OCCUPATIONS

693.380 Sample-Body Builder

710 OCCUPATIONS IN FABRICATION AND REPAIR OF INSTRUMENTS FOR MEASURING, CONTROLLING, AND INDICATING PHYSICAL CHARACTERISTICS

*710.281 Instrument Repairman I, S-318
710.781 Gas-Governor Repairman

72 ASSEMBLY AND REPAIR OF ELECTRICAL EQUIPMENT

724.381 Adjuster, Electrical Contacts
*729.281 Instrument Maker

739 OCCUPATIONS IN FABRICATION AND REPAIR OF PRODUCTS MADE FROM ASSORTED MATERIALS, N.E.C.

*739.381 Die Maker, S-307

806 TRANSPORTATION EQUIPMENT ASSEMBLERS AND RELATED OCCUPATIONS

*806.381 Shipfitter, S-45

807 BODYMEN, TRANSPORTATION EQUIPMENT

807.281 Truck Body Builder
*807.381 Automobile-Body Repairman Metal, S-313

809 MISCELLANEOUS OCCUPATIONS IN METAL FABRICATING N.E.C.

809.781 Lay-Out Man II

820 OCCUPATIONS IN ASSEMBLY, INSTALLATION, AND REPAIR OF GENERATORS, MOTORS, ACCESSORIES AND RELATED POWERPLANT EQUIPMENT

820.381 Power-Transformer Assembler

869 MISCELLANEOUS CONTRUCTION OCCUPATIONS, N.E.C.

869.281 Furnace-Installer-and-Repairman, Hot Air

OAP-11

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	95	91	88
S (Spatial Aptitude).....	85	84	82
F (Finger Dexterity).....	75	70	67

316 MEATCUTTERS, EXCEPT IN SLAUGHTERING AND PACKING HOUSES

*316.884 Meat Cutter, S-349

62 MECHANICS AND MACHINERY REPAIRMEN

*620.281 Automobile Mechanic, S-43
620.281 Bus Mechanic
620.281 Motorcycle Repairman
620.281 Tractor Mechanic
620.281 Truck Mechanic
620.381 Automobile-Radiator Man
620.381 Motor Repairman
625.281 Diesel-Engine Mechanic, Automobile

721 OCCUPATIONS IN ASSEMBLY AND REPAIR OF MOTORS, GENERATORS, AND RELATED PRODUCTS

721.281 Automobile-Generator Repairman

825 OCCUPATIONS IN ASSEMBLY, INSTALLATION, AND REPAIR OF TRANSPORTATION AND MATERIALS HANDLING EQUIPMENT

825.281 Electrician, Automotive

97 GRAPHIC ART WORK

974.381 Electrotyper
*975.782 Stereotyper, S-176

OAP-12

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	95	91	88
P (Form Perception).....	95	92	87
Q (Clerical Perception).....	100	96	92

185 WHOLESALE AND RETAIL TRADE MANAGERS AND OFFICIALS

185.168 Commissary Man
185.168 Manager, Retail Dairy Products
*185.168 Manager, Retail Food, S-225
185.168 Manager, Retail General Merchandise
185.168 Manager, Retail Variety

209 STENOGRAPHY, TYPING, FILING AND RELATED OCCUPATIONS

*209.588 Copy Holder, S 108
*209.688 Proofreader I, S-108

72 ASSEMBLY AND REPAIR OF ELECTRICAL EQUIPMENT

*726.884 Cable Maker, S 160
729.381 Wireman, Cable

OAP-13

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	90	86	83
V (Verbal Aptitude).....	90	88	84
Q (Clerical Perception).....	100	96	92

159 OCCUPATIONS IN ENTERTAINMENT AND RECREATION, N.E.C.

*159.228 Counselor, Camp, S-209

21 COMPUTING AND ACCOUNT RECORDING OCCUPATIONS

216.388 Balance Clerk
*219.388 Clerk, General Office, S-329
219.488 Cost Clerk
219.588 Posting Clerk

223 STOCK CLERKS AND RELATED OCCUPATIONS

223.388 Inventory Clerk

OAP-14

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	90	86	83
N (Numerical Aptitude).....	95	90	88
M (Manual Dexterity).....	75	69	66

311 WAITERS, WAITRESSES, AND RELATED FOOD SERVING OCCUPATIONS

311.878 Waiter, Informal
*311.878 Waitress, S-179

318 KITCHEN WORKERS, N.E.C.

318.887 Kitchen Helper

361 LAUNDERING OCCUPATIONS

361.381 Bricklayer, Refractory Brick

787 SEWING MACHINE OPERATORS, NONGARMENT

787.782 Brim Stitcher

861 BRICK AND STONE MASONS AND TILE SETTERS

*861.381 Bricklayer, S-107
861.381 Bricklayer, Sewer
861.381 Coke-Oven Mason
861.781 Tile Setter
861.884 Tuck Pointer

OAP-15

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	90	86	83
S (Spatial Aptitude).....	100	99	96
P (Form Perception).....	90	86	82

142 DESIGNERS

*142.081 Clothes Designer, S-88
142.081 Hat Designer
142.281 Copyist

789 OCCUPATIONS IN FABRICATION AND REPAIR OF TEXTILE, LEATHER, AND RELATED PRODUCTS, N.E.C.

789.381 Pattern Chart-Writer

809 MISCELLANEOUS OCCUPATIONS IN METAL FABRICATION, N.E.C.

*809.281 Structural-Steel Lay-Out Man, S-344

865 GLAZIERS AND RELATED OCCUPATIONS

865.381 Joiner

969 MISCELLANEOUS AMUSEMENT, RECREATION, AND MOTION PICTURE OCCUPATIONS

969.261 Costumer

OAP-16

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	90	86	83
S (Spatial Aptitude).....	85	84	82
P (Form Perception).....	85	81	76

706 METAL UNIT ASSEMBLERS AND ADJUSTERS, N.E.C.

*706.884 Power-Lawn-Mower Assembler, S-141

726 OCCUPATIONS IN ASSEMBLY AND REPAIR OF ELECTRONIC COMPONENTS AND ACCESSORIES, N.E.C.

*726.781 Electronics Assembler, S-310

804 TINSMITHS, COPPERSMITHS, AND SHEET METAL WORKERS

*804.281 Sheet-Metal Worker, S-82

862 PLUMBERS, GAS FITTERS, STEAM FITTERS, AND RELATED OCCUPATIONS

862.281 Coppersmith

971 PHOTOENGRAVING OCCUPATIONS

*971.381 Stripper, S-140

OAP-17

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	85	81	79
K (Motor Coordination).....	70	64	59
M (Manual Dexterity).....	75	69	66

542 DISTILLING, SUBLIMING, AND CARBONIZING OCCUPATIONS

542.280 Absorption-Plant Operator
542.280 Purification Operator
*542.280 Stillman, S-68
542.280 Stillman, Gas Plant

706 METAL UNIT ASSEMBLERS AND ADJUSTERS, N.E.C.

*706.884 Coil Assembler, S-102
706.887 Assembler, Production

710 OCCUPATIONS IN FABRICATION AND REPAIR OF INSTRUMENTS FOR MEASURING, CONTROLLING, AND INDICATING PHYSICAL CHARACTERISTICS

710.884 Thermostat Assembler

827 OCCUPATIONS IN ASSEMBLY, INSTALLATION, AND REPAIR OF LARGE HOUSEHOLD APPLIANCES AND SIMILAR COMMERCIAL AND INDUSTRIAL EQUIPMENT

*827.884 Air-Conditioning-Unit Installer, S-102

OAP-18

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	80	76	74
K (Motor Coordination).....	90	84	78
M (Manual Dexterity).....	80	74	71

355 ATTENDANTS, HOSPITALS, MORGUES, AND RELATED HEALTH SERVICES

*355.878 Psychiatric Aid, S-287

681 TWISTING, BEAMING, WARPING AND RELATED OCCUPATIONS

*681.885 Carding-Machine Operator, S-50
681.885 Spooling-Machine Operator

692 OCCUPATIONS IN FABRICATION OF PRODUCTS FROM ASSORTED MATERIALS

692.380 Firesetter, S-133

922 OCCUPATIONS IN MOVING AND STORING MATERIALS, N.E.C.

*922.883 Fork-Lift-Truck Operator, S-131
922.883 Gasoline-Truck Operator
922.883 Tier-Lift-Truck Operator

OAP-19

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	80	76	74
N (Numerical Aptitude).....	80	75	74
Q (Clerical Perception).....	80	77	73

168 INSPECTORS AND INVESTIGATORS, MANAGERIAL AND PUBLIC SERVICE

168.168 Customs Inspector
168.168 Safety Inspector
168.287 Customs Appraiser
168.287 Customs Examiner
168.287 Customs Verifier

181 MINING INDUSTRY MANAGERS AND OFFICIALS

181.118 Mine Superintendent

221 PRODUCTION CLERKS

*221.168 Material Coordinator, S-64
221.388 Order Detailer
221.887 Control Clerk

222 SHIPPING AND RECEIVING CLERKS

222.368 Expeditor I
222.368 Tracer

224 WEIGHERS

*224.487 Weighing-Station Operator, S-188

249 MISCELLANEOUS CLERICAL OCCUPATIONS, N.E.C.

249.368 Order Clerk II

505 METAL SPRAYING, COATING, AND RELATED OCCUPATIONS

505.885 Compound Mixer

511 SEPARATING, FILTERING, AND RELATED OCCUPATIONS

511.885 Precipitator I

549 OCCUPATIONS IN PROCESSING OF PETROLEUM, COAL, NATURAL AND MANUFACTURED GAS, AND RELATED PRODUCTS, N.E.C.

549.782 Treater

55 OCCUPATIONS IN PROCESSING OF CHEMICALS, PLASTICS, SYNTHETICS, RUBBER, PAINT AND RELATED PRODUCTS

551.782 Absorption Operator
551.782 Monomer-Purification Operator I
551.885 Leacher
552.885 Batch-Still Operator
558.782 Dissolver Operator I
559.885 Pressroom Worker, Fat

599 MISCELLANEOUS PROCESSING OCCUPATIONS, N.E.C.

599.885 Filter Operator

90 MOTOR FREIGHT OCCUPATIONS

902.883 Dump-Truck Driver
*903.884 Trailer-Tank-Truck Driver, S-124
*904.883 Tractor-Trailer-Truck Driver, S-124

914 PUMPING AND PIPELINE TRANSPORTATION OCCUPATIONS

914.885 Pumpman

920 PACKAGING OCCUPATIONS

*920.887 Garment Packer, S-361

922 OCCUPATIONS IN MOVING AND STORING MATERIALS, N.E.C.

922.887 Laborer, Stores

954 OCCUPATIONS IN FILTRATION, PURIFICATION, AND DISTRIBUTION OF WATER

*954.782 Water Filterer II, S-139

954 OCCUPATIONS IN FILTRATION, PURIFICATION, AND DISTRIBUTION OF WATER

*954.782 Water Filterer II, S-139

OAP-20

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	80	76	74
N (Numerical Aptitude).....	75	70	70
M (Manual Dexterity).....	85	79	76

62 MECHANICS AND
63 MACHINERY REPAIRMEN

620.281 Automotive-Maintenance-Equipment Serviceman
623.281 Junior Engineer
629.281 Laundry-Machine Mechanic
631.281 Hydroelectric-Machinery Mechanic
*638.281 Millwright, S-177

801 FITTING, BOLTING, SCREWING, AND RELATED OCCUPATIONS

*801.381 Aircraft Mechanic, Armament, S-69

825 OCCUPATIONS IN ASSEMBLY, INSTALLATION, AND REPAIR OF TRANSPORTION AND MATERIALS HANDLING EQUIPMENT, N.E.C.

*825.281 Electrician, Airplane, S-69
825.381 Electrician, Airplane

862 PLUMBERS, GAS FITTERS, STEAM FITTERS, AND RELATED OCCUPATIONS

862.281 Plumber
862.381 Gas-Fitter
862.381 Gas-Main Fitter
862.381 Pipe Fitter I, S-61
862.381 Pipe Fitter, Sprinkler Systems
862.381 Plumber, S-61
862.381 Steam Fitter

OAP-21

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	80	76	74
P (Form Perception).....	90	86	82
K (Motor Coordination).....	80	74	68

235 TELEPHONE OPERATORS

*235.862 Central-Office Operator, S-9
235.862 Information Operator
235.862 Telephone Operator

331 MANICURISTS

331.878 Manicurist

332 HAIRDRESSERS AND COSMETOLOGISTS

*332.271 Cosmetologist, S-71
332.271 Facial Operator
332.271 Hair Stylist
332.271 Hair Tinter

339 BARBERING, COSMETOLOGY, AND RELATED SERVICE OCCUPATIONS, N.E.C.

339.371 Scalp-Treatment Operator

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	75	71	69
F (Finger Dexterity).....	75	70	67
M (Manual Dexterity).....	80	74	71

60 METAL MACHINING OCCUPATIONS

604.885 Lathe Operator, Production
605.885 Milling-Machine Operator Production
606.782 Boring-Machine Operator
609.380 Engine-Lathe Set-Up Operator
*609.885 Production-Machine Operator, S-135

62 MECHANICS AND
63 MACHINERY REPAIRMEN

*621.381 Assembler, Aircraft Power Plant, S-76
626.281 Seamer Mechanic
630.381 Spray-Gun Repairman
633.281 Scale Mechanic
*639.281 Sewing-Machine Repairman, S-139

66 WOOD MACHINING OCCUPATIONS

663.782 Wood-Carving Machine Operator
664.782 Swing-Type-Lathe Operator
665.782 Chain-Mortiser Operator
665.782 Chucking-Machine Operator
665.782 Dado Operator
665.782 Dovetail-Machine Operator
665.782 Lock-Corner-Machine Operator
665.782 Shaper Operator
666.782 Boring-Machine Operator
667.782 Corner-Brace-Block-Machine Operator
667.782 Multiple-Cut-Off-Saw Operator
667.782 Stock Cutter
669.782 Nailing-Machine Operator
669.782 Tenoner Operator
*669.782 Woodworking Machine Operator, General, S-144

706 METAL UNIT ASSEMBLERS AND ADJUSTERS, N.E.C.

706.781 Precision Assembler, Bench
706.884 Instrument-Panel Assembler

710 OCCUPATIONS IN FABRICATION AND REPAIR OF INSTRUMENTS FOR MEASURING, CONTROLLING, AND INDICATING PHYSICAL CHARACTERISTICS

710.381 Register Repairman

779 OCCUPATIONS IN FABRICATION AND REPAIR OF SAND, CLAY, AND GLASS PRODUCTS, N.E.C.

*779.884 Fettler, S-22

80 METAL FABRICATING, N.E.C.

*801.381 Aircraft Mechanic, Rigging and Controls, S-76
801.781 Aircraft Mechanic, Heat and Vent
*806.381 Assembler, Aircraft, Structures and Surfaces, S-76
806.884 Mechanical Assembler
*806.887 Subassembler (3rd ed. Assembler, Automobile)

862 PLUMBERS, GAS FITTERS, STEAM FITTERS, AND RELATED OCCUPATIONS

862.381 Aircraft Mechanic, Plumbing and Hydraulics, S-76

920 PACKAGING OCCUPATIONS

*920.885 Tea-Bag Operator, S-301

OAP-23

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
N (Numerical Aptitude).....	95	90	88
P (Form Perception).....	100	97	92
Q (Clerical Perception).....	105	101	96

215 BOOKKEEPING-MACHINE OPERATORS

*215.388 Bookkeeping-Machine Operator I, S-5

216 COMPUTING-MACHINE OPERATORS

216.488 Adding-Machine Operator
*216.488 Calculating-Machine Operator, S-90
*216.488 Comptometer Operator, S-90

219 COMPUTING AND ACCOUNT RECORDING OCCUPATIONS, N.E.C.

219.588 Posting Clerk
219.588 Posting-Machine Operator I

OAP-24

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
N (Numerical Aptitude).....	85	80	79
S (Spatial Aptitude).....	95	94	91
F (Finger Dexterity).....	80	75	72

621 AIRCRAFT MECHANICS AND REPAIRMEN

621.281 Aircraft-and-Engine Mechanic

72 OCCUPATIONS IN ASSEMBLY AND REPAIR OF ELECTRICAL EQUIPMENT

*720.281 Radio Repairman, S-113
*720.281 Television Service-and-Repairman, S-113
720.884 Radio-Chassis Aliner
724.884 Header-and-Chopper Assembler

82 ELECTRICAL ASSEMBLING, INSTALLING, AND REPAIRING OCCUPATIONS

820.281 Electrician, Powerhouse
823.281 Public-Address Serviceman
824.138 Electrician, Chief (Motion Pic.)
824.281 Electrician, S-72
824.381 Electrician, Stage
825.131 Electrician, Foreman
825.381 Electrician, Yard
829.281 Electrical Repairman
829.281 Electrician, Machine Shop
829.281 Elevator Repairman
*829.281 Pinsetter Mechanic, Automatic, S-284

OAP-25

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
N (Numerical Aptitude).....	80	75	74
S (Spatial Aptitude).....	90	89	87
M (Manual Dexterity).....	80	84	71

079 OCCUPATIONS IN MEDICINE AND HEALTH, N.E.C.

*079.378 Dental Assistant, S-202

299 MERCHANDISING OCCUPATIONS, EXCEPT SALESMEN, N.E.C.

*299.381 Carpet Layer, S-185

600 MACHINISTS AND RELATED OCCUPATIONS

*600.280 Machinist I, S-12

619 MISCELLANEOUS METALWORKING OCCUPATIONS, N.E.C.

*619.381 Crusher Inspector, S-97
*619.381 Inspectors, Selected, S-97
*619.381 Mill-End Inspector, S-97
*619.381 Mill Inspector, S-97
*619.381 Pipe and Coupling Sizer, S-97
*619.381 Pipe Walker, S-97
619.384 Inspector
*619.687 Inspectors, Selected, S-97
*619.687 Thread Inspector, S-97

622 RAIL EQUIPMENT MECHANICS AND REPAIRMEN

622.381 Floor-Covering Layer

OAP-25 -- Continued

623 MARINE MECHANICS AND REPAIRMEN

623.281 Machinist, Outside

763 OCCUPATIONS IN FABRICATION AND REPAIR OF FURNITURE, N.E.C.

763.884 Leather Tooler

840 CONSTRUCTION AND MAINTENANCE PAINTERS AND RELATED OCCUPATIONS

840.781 Calcimer
*840.781 Painter, S-203
840.781 Varnisher

860 CARPENTERS AND RELATED OCCUPATIONS

860.381 Boatbuilder, Wood
*860.381 Carpenter, S-11

864 FLOOR LAYING AND FINISHING OCCUPATIONS

*864.781 Floor Layer, S-185

OAP-26

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
S (Spatial Aptitude).....	85	84	82
P (Form Perception).....	90	86	82
F (Finger Dexterity).....	85	80	77

503 PICKING, CLEANING, DEGREASING, AND RELATED OCCUPATIONS

*503.885 Payoff Operator, S-98

509 OCCUPATIONS IN PROCESSING OF METAL, N.E.C.

*509.782 Rewind Operator, S-98

613 SHEET AND BAR ROLLING OCCUPATIONS

*613.782 Cold-Mill Operator, S-98
613.782 Finisher
*613.782 Hot-Mill Operator, S-98
613.782 Rolling-Mill Operator
613.782 Straightening-Roll Operator

615 PUNCHING AND SHEARING OCCUPATIONS

*615.782 Slitting-Machine Operator II, S-98

683 WEAVERS AND RELATED OCCUPATIONS

*683.782 Weaver, S-115

715 OCCUPATIONS IN FABRICATION AND REPAIR OF WATCHES, CLOCKS, AND PARTS

*715.281 Repairman (Clock & Watch), S-151
*715.381 Hairspring Inspector I, S-151
*715.381 Train Inspector (Clock & Watch), S-151
*715.585 Timing-Machine Operator, S-151
*715.781 Banking Adjuster, S-151

715 OCCUPATIONS IN FABRICATION AND REPAIR OF WATCHES, CLOCKS, AND PARTS (Cont'd)

*715.884 Balance Assembler, S-151
*715.884 Mechanism Assembler, S-151
*715.884 Oiler, S-151
*715.885 Endshake Adjuster, S-151
*715.887 Hairspring Pinner, S-151

782 HAND SEWERS, MENDERS, EMBROIDERS, KNITTERS, AND RELATED OCCUPATIONS, N.E.C.

782.884 Sewer, Hand

785 TAILORS AND DRESSMAKERS

785.261 Master Tailor
*785.381 Seamstress, S-59
785.381 Tailor, Women's-Garment Alteration

OAP-27

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
S (Spatial Aptitude).....	80	80	77
F (Finger Dexterity).....	90	85	82
M (Manual Dexterity).....	85	79	76

631 POWERPLANT MECHANICS AND REPAIRMEN

631.281 Powerhouse Repairman

68 TEXTILE OCCUPATIONS

685.380 Knitter Mechanic
*689.280 Knitting-Machine Fixer, Sox, S-91
*689.782 Hosiery Looper, S-119

706 METAL UNIT ASSEMBLERS AND ADJUSTERS, N.E.C.

*706.884 Assembler, Small Parts

71 OCCUPATIONS IN FABRICATION AND REPAIR OF SCIENTIFIC AND MEDICAL APPARATUS, PHOTOGRAPHIC AND OPTICAL GOODS, WATCHES AND CLOCKS, AND RELATED PRODUCTS

*710.884 Gyroscope Assembler, S-253
*715.381 Hairspring Vibrator, S-150
*715.387 Wheel Inspector, S-150
*715.687 Inspector, Balance Wheel and Impulse Pin, S-150
*715.884 Balance Truer II, S-150
*715.884 Put-In-Beat Adjuster, S-150
*715.887 Balance-Wheel-And-Impulse-Pin Subassembler, S-150
*715.887 Hairspring Solderer, S-150

72 ASSEMBLY AND REPAIR OF ELECTRIC EQUIPMENT

*721.884 Electric Motor Winder
*723.884 Assembler I (Elec. Equip.)
*723.884 Electric-Fan Assembler
723.884 Electric-Range Assembler
724.884 Coil Winder II
*724.884 Header-and-Chopper Assembler (Elec. Equip.)
726.781 Radio Transmitter Assembler
729.884 Chassis Assembler
*729.884 Electrical-Control Assembler

73 OCCUPATIONS IN FABRICATION AND REPAIR OF PRODUCTS MADE FROM ASSORTED MATERIALS

737.887 Explosive Operator I
*737.887 Fireworks Assembler, S-52
*739.884 Case Coverer, S-174
*739.884 Case Liner, S-174

800 RIVETERS

Riveter, Aircraft

81 WELDING, FLAME CUTTING, AND RELATED WORK

810.884 Welder, Arc
810.884 Welder, Atomic
811.884 Welder, Gas
*812.884 Welder, Combination, S-126

952 OCCUPATIONS IN GENERATION, TRANSMISSION, AND DISTRIBUTION OF ELECTRIC LIGHT AND POWER

952.782 Hydroelectric-Station Operator
952.782 Powerman I
952.782 Power-Plant Attendant
*952.782 Power-Plant Operator I, S-106
952.782 Substation Operator

OAP-28

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
S (Spatial Aptitude).....	75	75	73
P (Form Perception).....	75	70	66
M (Manual Dexterity).....	75	69	66

529 OCCUPATIONS IN PROCESSING OF FOOD, TOBACCO, AND RELATED PRODUCTS, N.E.C.

*529.885 Wrapper Layer, S-20
*529.885 Wrapper Layer and Examiner, Soft Work, S-20

571 SEPARATING OCCUPATIONS

*571.884 Rifter, S-1

585 SINGEING, CUTTING, SHEARING, SHAVING, AND NAPPING OCCUPATIONS

585.885 Fur-Cutting-Machine Operator

604 TURNING OCCUPATIONS

604.280 Engine-Lathe-Set-Up Operator, Tool
604.280 Screw-Machine Set-Up Operator, Tool
*604.280 Turret-Lathe Set-Up Operator, Tool, S-33

64 PAPERWORK OCCUPATIONS

*641.885 Carton-Forming-Machine Operator, S-306
*649.885 Bag-Machine Operator, S-137
*649.885 Waxed-Bag-Machine Operator, S-137

669 WOOD MACHINING OCCUPATIONS, N.E.C.

669.587 Veneer Grader
*669.587 Veneer Matcher

68 TEXTILE OCCUPATIONS

*681.885 Twister Tender
682.885 Bobbin Winder, Machine

690 PLASTICS, SYNTHETICS, RUBBER AND LEATHER WORKING OCCUPATIONS

690.885 Counter Molder I
690.885 Heel Compressor

699 MISCELLANEOUS MACHINE TRADE OCCUPATIONS, N.E.C.

*699.782 Die Cutter, S-123

712 OCCUPATIONS IN FABRICATION AND REPAIR OF SURGICAL, MEDICAL, AND DENTAL INSTRUMENTS AND SUPPLIES

712.281 Dental Ceramist
*712.381 Dental-Laboratory Technician, S-285

76 OCCUPATIONS IN FABRICATION AND REPAIR OF WOOD PRODUCTS

761.884 Plywood Patcher, Hand
769.687 Veneer-Stock Grader

788 OCCUPATIONS IN FABRICATION AND REPAIR OF FOOTWEAR

788.884 Buttonhole Maker

921 HOISTING AND CONVEYING OCCUPATIONS

921.883 Electric-Bridge-or-Gantry Crane Operator

OAP-29

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
P (Form Perception).....	90	86	82
F (Finger Dexterity).....	85	80	77
M (Manual Dexterity).....	75	69	66

649 PAPERWORKING OCCUPATIONS, N.E.C.

649.387 Paper-Bag Inspector

684 HOSIERY KNITTING OCCUPATIONS

*684.687 Pairer (Hosiery), S-60
684.687 Pairer, Odds (Hosiery)

709 MISCELLANEOUS OCCUPATIONS IN FABRICATION, ASSEMBLY, AND REPAIR OF METAL PRODUCTS, N.E.C.

709.884 Cable Swager

781 LAYING OUT, MARKING, CUTTING, AND PUNCHING OCCUPATIONS, N.E.C.

781.687 Cloth Examiner, Hand

807 BODYMEN, TRANSPORTATION EQUIPMENT

807.884 Solderer, Torch

814 BRAZING, BRAZE-WELDING, AND SOLDERING OCCUPATIONS

*814.884 Solderer, Production Line, S-142

899 MISCELLANEOUS STRUCTURAL WORK OCCUPATIONS, N.E.C.

*899.887 General Labor Worker, S-364

OAP-30

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
P (Form Perception).....	85	81	76
K (Motor Coordination).....	85	79	73
M (Manual Dexterity).....	100	94	91

502 MELTING, POURING, CASTING, AND RELATED OCCUPATIONS

*502.884 Second Helper-Open Hearth, S-356

51 ORE REFINING AND FOUNDRY WORK

518.381 Hand Rammer, S-365
*518.381 Ingot Mold Foundry Jobs, S-365
*518.883 Ingot Mold Foundry Jobs, S-365
*519.887 Ingot Mold Foundry Jobs, S-365
519.887 Knockout Man, S-365

55 OCCUPATIONS IN PROCESSING OF CHEMICALS, PLASTICS, SYNTHETICS, RUBBER, PAINT, AND RELATED PRODUCTS

*556.885 Record-Press Tender, S-46
559.885 Presser II (Soap)

575 FORMING OCCUPATIONS

575.782 Dry-Press Operator
575.782 Retort-or-Condenser Pressman

613 SHEET AND BAR ROLLING OCCUPATIONS

613.381 Guide Setter, S-367
*613.381 Rolling-Mills Jobs, S-367
*613.782 Rolling-Mills Jobs, S-367

97 OCCUPATIONS IN GRAPHIC ART WORK

976.381 Projection Printer
*976.782 Multiple-Photographic-Printer Operator, S-86
979.382 Photostat Operator

OAP-31

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
P (Form Perception).....	85	81	76
K (Motor Coordination).....	80	74	68
M (Manual Dexterity).....	80	74	71

311 WAITERS, WAITRESSES, AND RELATED FOOD SERVING OCCUPATIONS

*311.878 Countergirl, S-164
311.878 Countergirl, Cafeteria
311.878 Counterman, Cafeteria
*311.878 Counterman, Lunchroom or Coffee Shop, S-164
311.878 Floor Girl, Cafeteria

317 MISCELLANEOUS FOOD AND BEVERAGE PREPARATION OCCUPATIONS

317.884 Pantryman

319 FOOD AND BEVERAGE PREPARATION AND SERVICE OCCUPATIONS, N.E.C.

319.887 Counter-Supply Man

405 CROP SPECIALTY FARMING OCCUPATIONS

*405.887 Farm Hand, Tobacco

529 OCCUPATIONS IN PROCESSING OF FOOD, TOBACCO, AND RELATED PRODUCTS, N.E.C.

529.886 Crab Picker
*529.886 Shrimp Picker, S-265

60 METAL MACHINING OCCUPATIONS

*603.885 Burrer, Machine, S-152
*606.885 Reamer, S-152

617 FORMING OCCUPATIONS

617.782 Hobbing-Press Operator

715 OCCUPATIONS IN FABRICATION AND REPAIR OF WATCHES, CLOCKS, AND PARTS

*715.687 Lancing Gager, S-152
*715.884 Burrer, S-152
*715.884 Staker, S-152
*715.887 Barrel-Arbor Assembler, S-152
*715.887 Main-Arbor-and-Hook Assembler, S-152
*715.887 Pinion Reamer, S-152
*715.887 Retaining-Spring Attacher, S-152
*715.887 Rocking-Bar Adjuster, S-152
*715.887 Tray Leader, S-152

72 OCCUPATIONS IN ASSEMBLY AND REPAIR OF ELECTRICAL EQUIPMENT

725.887 Grid Trimmer
726.884 Terminal Assembler

737 OCCUPATIONS IN FABRICATION OF AMMUNITION, FIREWORKS, EXPLOSIVES, AND RELATED PRODUCTS

*737.884 Bomb-Fuse-Parts Assembler, S-24
737.884 Shell Assembler

750 OCCUPATIONS IN FABRICATION AND REPAIR OF TIRES, TUBES, TIRE TREADS, AND RELATED PRODUCTS

*750.884 Tire Builder, Automobile, S-267
750.884 Tire Builder, Truck

770 OCCUPATIONS IN FABRICATION AND REPAIR OF JEWELRY, ORNAMENTS, AND RELATED PRODUCTS

770.884 Turner, Machine

794 OCCUPATIONS IN FABRICATION OF PAPER PRODUCTS, N.E.C.

*794.887 Folder, Hand, S-34
*794.887 Gatherer, S-34
*794.8[illegible] Inserter, Carbon Tissue, S-34
794.887 Paper-Pattern Folder

806 TRANSPORTATION EQUIPMENT ASSEMBLERS AND RELATED OCCUPATIONS

*806.781 Outboard-Motor Assembler, S-13

920 PACKAGING OCCUPATIONS

*920.885 Wrapping-Machine Operator, S-34
*920.887 Wrapper, (Print. and Pub.), S-34

977 BOOKBINDERS AND RELATED OCCUPATIONS

*977.884 Tipper, S-34

633 BUSINESS AND COMMERCIAL MACHINE REPAIRMEN

633.281 Accounting-Machine Serviceman
*633.281 Adding-Machine Serviceman, S-234
*633.281 Calculating-Machine Serviceman, S-234
*633.281 Cash-Register Serviceman, S-234
633.281 Dictating-Transcribing-Machine Serviceman
*633.281 Duplicating-Machine Serviceman, S-234
*633.281 Office-Machine Serviceman, S-234
633.281 Tabulating-Equipment Mechanic
*633.281 Typewriter Serviceman, S-234

64 PAPERWORKING OCCUPATIONS

640.885 Slotter Operator
*641.782 New-Era-Unit Operator, S-34
641.885 Envelope-Machine Operator
*643.885 Bindery Workers, S-34
*649.687 Paper Sorter and Counter, S-104
*649.885 Drill-Punch Operator, S-34

65 PRINTING OCCUPATIONS

*651.687 Inspector, Printed Forms, S-34
653.780 Gathering-Machine Set-Up Man
653.782 Head-Bander-and-Liner Operator
*659.885 Perforating-Machine Operator, S-34

689 TEXTILE OCCUPATIONS, N.E.C.

*689.885 Balling-Machine Operator, S-34

690 PLASTICS, SYNTHETICS, RUBBER, AND LEATHER WORKING OCCUPATIONS

*690.782 Fancy Stitcher, S-159
*690.782 Top Stitcher, S-159
*690.782 Vamp Stitcher, S-159

691 OCCUPATIONS IN FABRICATION OF INSULATED WIRE AND CABLE

*691.782 Insulating-Machine Operator, S-308
691.885 Pairing-Machine Operator, S-308

700 OCCUPATIONS IN FABRICATION, ASSEMBLY, AND REPAIR OF JEWELRY, SILVERWARE, AND RELATED PRODUCTS

700.884 Arborer
700.884 Driller
*700.884 Ring Maker II, S-143
700.884 Riveter (Jewelry)

705 FILING, GRINDING, BUFFING, CLEANING, AND POLISHING OCCUPATIONS, N.E.C.

705.884 Filer, Hand

709 MISCELLANEOUS OCCUPATIONS IN FABRICATION, ASSEMBLY, AND REPAIR OF METAL PRODUCTS, N.E.C.

*709.884 Straightener, S-152

OAP-32

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
P (Form Perception).....	75	70	66
F (Finger Dexterity).....	80	75	72
M (Manual Dexterity).....	80	74	71

20 STENOGRAPHY, TYPING, FILING, AND RELATED OCCUPATIONS

*208.782 Ticket-Machine Operator
209.588 Marker II

319 FOOD AND BEVERAGE PREPARATION AND SERVICE OCCUPATIONS, N.E.C.

*319.878 Fountain Girl, S-311

52 OCCUPATIONS IN PROCESSING OF FOOD, TOBACCO, AND RELATED PRODUCTS

*521.887 Egg Breaker
*521.887 Nut Sorter I, S-96
*529.687 Cherry Sorter, S-116
*529.687 Fruit Sorter, S-116
*529.687 Olive Sorter, S-116
*529.886 Peeling-and-Coring Machine Operator, S-92

55 OCCUPATIONS IN PROCESSING OF CHEMICALS, PLASTICS,

553.885 Watchcase-Vulcanizer Tender
559.885 Golf-Ball Molder
*559.885 Pressman, O-Rings, S-17
559.885 Rubber-Heel-and-Sole Pressman

573 BAKING, DRYING, AND HEAT-TREATING OCCUPATIONS

*573.687 Tile Sorter, S-112
*573.887 Tile Placer, S-112

602 GEAR MACHINING OCCUPATIONS

602.382 Inspector, Floor

609 METAL MACHINING OCCUPATIONS

609.684 Booster Inspector

61 METAL MACHINING OCCUPATIONS, N.E.C.

611.885 Coining-Press Operator
*615.782 Punch-Press Operator I, S-44
*619.380 Metal Fabricator I, S-235
619.886 Machine Feeder

651 PRINTING PRESS OCCUPATIONS

*651.782 Printer-Slotter Operator, S-369

689 TEXTILE OCCUPATIONS, N.E.C.

*689.684 Burler, S-75
689.684 Specker

699 MISCELLANEOUS MACHINE TRADES OCCUPATIONS, N.E.C.

699.885 Snap-Fastener-Machine Operator (Hat & Cap)

732 OCCUPATIONS IN FABRICATION AND REPAIR OF SPORTING GOODS

732.884 Celluloid Trimmer
732.884 Fishing-Reel Assembler
*732.884 Fishing-Rod Assembler, S-79

733 OCCUPATIONS IN FABRICATION AND REPAIR OF PENS, PENCILS, AND OFFICE AND ARTISTS' MATERIALS, N.E.C.

*733.884 Paint-Brush Maker

737 OCCUPATIONS IN FABRICATION OF AMMUNITION, FIREWORKS, EXPLOSIVES, AND RELATED PRODUCTS

737.387 Inspector I

75 OCCUPATIONS IN FABRICATION AND REPAIR OF PLASTICS, SYNTHETICS, RUBBER AND RELATED PRODUCTS

750.884 Tube Splicer I
*751.887 Cementer, Life Rafts, S-94
753.887 Back Joiner

773 OCCUPATIONS IN COLORING AND DECORATING BRICK, TILE, AND RELATED PRODUCTS

*773.884 Paster, S-112

78 OCCUPATIONS IN FABRICATION AND REPAIR OF TEXTILE, LEATHER, AND RELATED PRODUCTS

*782.884 Mender, S-75
784.884 Cap Maker
786.782 Binder I
786.782 Blind-Piping-Machine Operator
786.782 Button Facer
786.782 Buttonhole Facer
786.782 Fagoting-Machine Operator I
786.782 Gathering-Machine Operator
786.782 Ribbon-Machine Operator
786.782 Sewing-Machine Operator, Cotton Garments
786.782 Sewing-Machine Operator, Leather Garments
*786.782 Sewing-Machine Operator, Lingerie, S-4
*786.782 Sewing-Machine Operator, Men's Tailored Garments, S-4
*786.782 Sewing-Machine Operator, Regular Equipment
*786.782 Sewing-Machine Operator, Style Garments, S-4
786.782 Sewing-Machine Operator, Women's Coats and Suits
786.782 Sewing-Machine Operator, Work Clothing
786.782 Shirt Hemmer
786.782 Skirt Hemmer
786.782 Strap-Machine Operator
786.782 Taping-Machine Operator

78 OCCUPATIONS IN FABRICATION AND REPAIR OF TEXTILE, LEATHER, AND RELATED PRODUCTS

786.782 Zipper Sewer
786.885 Buttonhole-Machine Operator
786.885 Button-Sewing-Machine Operator
786.885 Eyelet-Machine Operator II
786.885 Snap-Fastener-Machine Operator (Knit Goods)
787.782 Awning Assembler
787.782 Awning Binder
787.782 Bag and Sack Sewer
787.782 Binder II
787.782 Brim Stitcher
787.782 Chin-Strap Sewer
787.782 Cloth Joiner (Tents)
787.782 End-to-End Sewer
*787.782 Glove Sewer, S-4
787.782 Hemstitching-Machine Operator
787.782 Mitten Stitcher
787.782 Parachute-Accessories Attacher
787.782 Parachute-Cover Sewer
787.782 Parachute-Crown Sewer
787.782 Parachute-Cushion Installer
787.782 Parachute-Harness Maker
787.782 Parachute-Panel Jointer
787.782 Parachute Repairer
787.782 Parachute Taper
787.782 Pillow-Case Sewer
787.782 Sewing-Machine Operator
787.782 Sheet Sewer
787.782 Shirring-Machine Operator
787.782 Slip-Cover Seamstress
787.782 Tucking-Machine Operator
787.782 Tuft-Machine Operator
787.782 Umbrella Sewer
787.782 Visor Maker
787.782 Welt Sewer

78 OCCUPATIONS IN FABRICATION AND REPAIR OF TEXTILE, LEATHER, AND RELATED PRODUCTS

787.885 Hemming-and-Tacking Machine Operator
787.885 Rug Hemmer II
787.885 Sewing-Machine Operator, Automatic
787.885 Tacking-Machine Operator
788.887 Shoe Cleaner

806 TRANSPORTATION EQUIPMENT ASSEMBLERS AND RELATED OCCUPATIONS

806.381 Inspector, Assemblies and Installations
806.384 Procurement Inspector
*806.887 Assembler, Automobile, S-101

92 PACKAGING AND MATERIALS HANDLING OCCUPATIONS

*920.885 Candy-Wrapping-Machine Operator II, S-99
*920.887 Apple Packer, S-116
920.887 Avocado Packer
920.887 Blueprint Trimmer
*920.887 Cherry Packer, S-116
*920.887 Citrus-Fruit Packer, S-116
920.887 Egg Packer
*920.887 Packer, S-116
*920.887 Pear Packer, S-116
*920.887 Plum Packer, S-116
920.887 Tobacco Packer
929.886 Laborer, Bakery

976 DARKROOM OCCUPATIONS, N.E.C.

*976.885 Mounting Operator, S-161
976.887 Film Loader

OAP-33

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
Q (Clerical Perception).....	90	86	83
F (Finger Dexterity).....	80	75	72
M (Manual Dexterity).....	85	79	76

207 DUPLICATING MACHINE OPERATORS

*207.782 Offset-Duplicating Machine Operator

691 OCCUPATIONS IN FABRICATION OF INSULATED WIRE AND CABLE

691.885 Armoring-Machine Operator

724 WINDING AND ASSEMBLY OF COILS, MAGNETS, ARMATURES, AND RELATED PRODUCTS

724.884 Armature Bander
724.884 Coil Winder II, S-220
724.884 Universal-Winding-Machine Operator

726 OCCUPATIONS IN ASSEMBLY AND REPAIR OF ELECTRONIC COMPONENTS AND ACCESSORIES, N.E.C.

726.884 Crystal-Unit Assembler

794 OCCUPATIONS IN FABRICATION OF PAPER PRODUCTS, N.E.C.

794.884 Box Maker, Paperboard

920 PACKAGING OCCUPATIONS

*920.687 Bundler, Laundry
*920.885 Napkin Packager, S-372
920.887 Bundler
*920.887 Merchandise Packer, S-165

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
K (Motor Coordination).....	90	84	78
F (Finger Dexterity).....	85	80	77
M (Manual Dexterity).....	90	84	81

529 PROCESSING FOOD AND RELATED PRODUCTS, N.E.C.

*529.687 Asparagus Sorter, S-374
*529.886 Cannery Worker, S-281

61 METALWORKING OCCUPATIONS, N.E.C.

617.885 Punch-Press Operator II
*619.885 Machine Attendant, S-233

677 CHIPPING, CUTTING, SAWING, AND RELATED OCCUPATIONS

677.885 Glass-Cutter

692 OCCUPATIONS IN FABRICATION OF PRODUCTS FROM ASSORTED MATERIALS

*692.885 Light-Bulb Assembler, S-56

706 METAL UNIT ASSEMBLERS AND ADJUSTERS, N.E.C.

706.884 Metal-Bed Assembler

71 OCCUPATIONS IN FABRICATION AND REPAIR OF SCIENTIFIC AND MEDICAL APPARATUS, PHOTOGRAPHIC AND OPTICAL GOODS, WATCHES AND CLOCKS AND RELATED PRODUCTS

710.884 Odometer Assembler
713.884 Assembler, Cold Frame
*713.884 Goggle-Glass Cutter, S-148
713.884 Groover
*713.884 Lens Cutter II, S-148

72 OCCUPATIONS IN ASSEMBLY AND REPAIR OF ELECTRICAL EQUIPMENT

*723.885 Appliance-Cord Assembler, S-244
724.884 Rotor-Coil Taper

72 OCCUPATIONS IN ASSEMBLY AND REPAIR OF ELECTRICAL EQUIPMENT (Continued)

*726.884 Capacitor Winder, S-281
726.887 Mounter I
729.884 Electric-Sign Assembler

731 OCCUPATIONS IN FABRICATION AND REPAIR OF GAMES AND TOYS

*731.884 Assembler (Toys and Games), S-134
*731.884 Model-Airplane Assembler, S-134
*731.884 Toy-Train Assembler, S-134
731.887 Assembler, Toy Voices

739 OCCUPATIONS IN FABRICATION AND REPAIR OF PRODUCTS MADE FROM ASSORTED MATERIALS, N.E.C.

*739.884 Metal-Chair Assembler, S-194
739.884 Table Assembler, Metal

810 ARC WELDERS

810.782 Welder, Spot I

OAP-35

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
K (Motor Coordination).....	90	86	83
F (Finger Dexterity).....	80	75	72
M (Manual Dexterity).....	85	79	76

363 PRESSING OCCUPATIONS

*363.781 Silk Finisher, S-138
*363.884 Presser, Hand, S-138
363.887 Glove Former
363.887 Puff Ironer

52 OCCUPATIONS IN PROCESSING OF FOOD AND RELATED PRODUCTS

525.884 Fish Cleaner
525.887 Chicken Boner
525.887 Linker
*525.887 Poultry-Dressing Worker, S-26
*529.886 Cannery Worker, S-121 and S-122
*529.886 Corn-Cutting-Machine Operator, S-121
*529.886 Corn-Husking-Machine Operator, S-121
*529.886 Cutter, Machine, S-121
*529.886 Onion Corer, S-269
*529.886 Sorter, S-122
*529.886 Trimmer, S-122
529.886 Weight Checker, S-122

52 OCCUPATIONS IN PROCESSING OF FOOD AND RELATED PRODUCTS (Cont'd)

*529.887 Casing Tier, S-35
*529.887 Cutter, Hand, S-122
*529.887 Skin Peeler, S-35

556 CASTING AND MOLDING OCCUPATIONS, N.E.C.

556.782 Injection-Molding-Machine Operator
*556.885 Compression-Molding-Machine Tender S-218

583 IRONING, PRESSING, GLAZING, STAKING, CALENDERING, AND EMBOSSING OCCUPATIONS

583.885 Pressing-Machine Operator I
583.885 Roller Machine Operator

640 PAPER CUTTING, WINDING, AND RELATED OCCUPATIONS

640.782 Slitter-and-Cutter Operator

68 TEXTILE OCCUPATIONS

681.885 Skein Winder
*682.885 Spinner, Ring Frame, S-53
*683.886 Battery Loader, S-248

69 MACHINE WORK, N.E.C.

690.885 Paper Cutter
*692.885 Baser, S-27
*692.885 Light-Bulb Assembler
*699.782 Slitting-Machine Operator I

706 METAL UNIT ASSEMBLERS AND ADJUSTERS, N.E.C.

706.884 Luggage-Hardware Assembler, S-136

715 OCCUPATIONS IN FABRICATION AND REPAIR OF WATCHES, CLOCKS, AND PARTS

*715.687 Final Inspector, Movement Assembly, S-149
*715.687 Inspector, Casing, S-149
*715.884 Caser, S-149
*715.884 Dialer, S-149
*715.884 Hands Assembler, S-149
*715.887 Liner-and-Gasket Inserter, S-149

715 OCCUPATIONS IN FABRICATION AND REPAIR OF WATCHES, CLOCKS, AND PARTS (Cont'd)

*715.887 Lint Remover, S-149
*715.887 Sweep-Spring Attacher, S-149

72 OCCUPATIONS IN ASSEMBLY AND REPAIR OF ELECTRICAL EQUIPMENT

*720.687 Inspector, Marked Reels
*721.884 Electric-Motor Assembler, S-21
*722.884 Assembler, Radiosonde, S-81
*723.884 Assembler, Components, S-191
*725.887 Threader (Electronics), S-27
*726.884 Crystal Finisher
*726.887 Mounter I, S-8
*727.887 Assembler, Dry Cell and Battery, S-66
729.884 Speaking-Unit Assembler
729.884 Telephone-Diaphragm Assembler

739 OCCUPATIONS IN FABRICATION AND REPAIR OF PRODUCTS MADE FROM ASSORTED MATERIALS, N.E.C.

739.884 Curtain-Roller Assembler
*739.884 Venetian-Blind Assembler, S-187

780 OCCUPATIONS IN UPHOLSTERING AND IN FABRICATION AND REPAIR OF MATTRESSES, AND BEDSPRINGS

780.381 Automobile Upholsterer
*780.381 Furniture Upholsterer, S-57

782 HAND SEWERS, MENDERS, EMBROIDERS, KNITTERS, AND RELATED OCCUPATIONS, N.E.C.

*782.884 Embroider, Hand

787 SEWING MACHINE OPERATORS, NONGARMENT

*787.782 Seamer (Hosiery), S-78

788 OCCUPATIONS IN FABRICATION AND REPAIR OF FOOTWEAR

788.884 Binding Folder, Machine
788.884 Folder, Hand
788.884 Louis-Heel Fitter
*788.887 Cementer, Hand, S-147

789 OCCUPATIONS IN FABRICATION AND REPAIR OF TEXTILE, LEATHER, AND RELATED PRODUCTS, N.E.C.

*789.887 Garment Folder, S-63

794 OCCUPATIONS IN FABRICATION OF PAPER PRODUCTS N.E.C.

794.884 Box Maker, Paperboard

806 TRANSPORTATION EQUIPMENT ASSEMBLERS AND RELATED OCCUPATIONS

*806.781 Gasoline-Engine Assembler

920 PACKAGING OCCUPATIONS

920.885 Cellophane Wrapper, Machine
*920.885 Packager, Solutions, and Syringes, S-3
*920.887 Candy Packer, S-193
*920.887 Cheese Wrapper and Packer, S-16
920.887 Packager, Hand
*920.887 Packer, Sausage and Weiner, S-35
*920.887 Scaler, Sliced-Bacon, S-35
*920.887 Table Worker, S-28
920.887 Wrapper
920.887 Wrapper, Hand

OAP-36

B-1002 NORMS

APTITUDES	CUTTING SCORES		
	Adult	Grade 10	Grade 9
G (Intelligence).....	105	101	98
Q (Clerical Perception).....	100	96	92
K (Motor Coordination).....	90	84	78

201 SECRETARIES

201.368 Secretary

202 STENOGRAPHERS

202.388 Court Reporter
*202.388 Stenographer, S-10
202.388 Stenographer, Print Shop
202.388 Stenotype Operator

203 TYPISTS

203.582 Vari-Typist
203.588 Telegraphic-Typewriter Operator
*203.588 Typist, S-10

207 DUPLICATING-MACHINE OPERATORS

207.782 Typewriter Operator, Automatic

208 MISCELLANEOUS OFFICE MACHINE OPERATORS

*209.588 Typesetter-Perforator Operator, S-297

209 STENOGRAPHY, TYPING, FILING, AND RELATED OCCUPATIONS, N.E.C.

209.388 Continuity Clerk
209.588 Clerk-Typist

973 HAND COMPOSITORS, TYPESETTERS, AND RELATED OCCUPATIONS

*973.381 Compositor I, S-51
973.381 Make-Up Man (Print. and Pub.)

SUMMARY TABLE

Relationship of OAP's to DOT OGA's

00
01 Occupations in Architecture and Engineering

OAP - 1
OAP - 3

02 Occupations in Mathematics and Physical Sciences

OAP - 1
OAP - 2
OAP - 8

07 Occupations in Medicine and Health

OAP - 1
OAP - 2
OAP - 3
OAP - 5
OAP - 6
OAP - 8
OAP - 9
OAP -25

09 Occupations in Education

OAP - 3

10 Occupations in Museum, Library, and Archival Sciences

OAP - 4

14 Occupations in Art

OAP - 15

15 Occupations in Entertainment and Recreation

OAP - 13

16 Occupations in Administrative Specializations

OAP - 2
OAP - 3
OAP - 4
OAP - 6
OAP - 19

18 Managers and Officials, N.E.C.

OAP - 1
OAP - 2
OAP - 3
OAP - 7
OAP - 8
OAP - 9
OAP - 12
OAP - 19

19 Miscellaneous Professional, Technical, and Managerial Occupations

OAP - 1
OAP - 3

SUMMARY TABLE

Relationship of OAP's to DOT OGA's

20 Stenography, Typing, Filing, and Related Occupations

OAP - 6
OAP - 9
OAP - 12
OAP - 32
OAP - 36

21 Computing and Account-Recording Occupations

OAP - 6
OAP - 7
OAP - 9
OAP - 13
OAP - 23

22 Material and Production Recording Occupations

OAP - 13
OAP - 19

23 Information and Message Distribution Occupations

OAP - 9
OAP - 21

24 Miscellaneous Clerical Occupations

OAP - 3
OAP - 6
OAP - 9
OAP - 19

26 27 28 Salesmen and Salespersons, Commodities

OAP - 9

29 Merchandising Occupations, Except Salesmen

OAP - 4
OAP - 9
OAP - 25

31 Food and Beverage Preparation and Service Occupations

OAP - 10
OAP - 11
OAP - 14
OAP - 31
OAP - 32

SUMMARY TABLE

Relationship of OAP's to DOT OGA's

32 Lodging and Related Service Occupations

OAP - 9

33 Barbering, Cosmetology, and Related Service Occupations

OAP - 3
OAP - 21

35 Miscellaneous Personal Service Occupations

OAP - 6
OAP - 18

36 Apparel and Furnishings Service Occupations

OAP - 14
OAP - 35

37 Protective Service Occupations

OAP - 10

40 Plant Farming Occupations

OAP - 31

50 Occupations in Processing of Metal

OAP - 19
OAP - 26
OAP - 30

51 Ore Refining and Foundry Occupations

OAP - 19
OAP - 30

52 Occupations in Processing of Food, Tobacco, and Related Products

OAP - 28
OAP - 31
OAP - 32
OAP - 34
OAP - 35

54 Occupations in Processing of Petroleum, Coal, Natural and Manufactured Gas, and Related Products

OAP - 17
OAP - 19

SUMMARY TABLE

Relationship of OAP's to DOT OGA's

55 Occupations in Processing of Chemicals, Plastics, Synthetics, Rubber, Paint, and Related Products

OAP - 30
OAP - 32
OAP - 35

56 Occupations in Processing of Wood and Wood Products

OAP - 35

57 Occupations in Processing of Stone, Clay, Glass, and Related Products

OAP - 28
OAP - 30
OAP - 32

58 Occupations in Processing of Leather, Textiles, and Related Products

OAP - 28
OAP - 35

59 Processing Occupations, N.E.C.

OAP - 19

60 Metal Machining Occupations

OAP - 10
OAP - 22
OAP - 25
OAP - 28
OAP - 31
OAP - 32

61 Metalworking Occupations, N.E.C.

OAP - 25
OAP - 26
OAP - 30
OAP - 31
OAP - 32
OAP - 34

62
63 Mechanics and Machinery Repairmen

OAP - 10
OAP - 11
OAP - 20
OAP - 22
OAP - 24
OAP - 25
OAP - 27
OAP - 31

SUMMARY TABLE

Relationship of OAP's to DOT OGA's

64 Paperworking Occupations

OAP - 28
OAP - 29
OAP - 31
OAP - 35

65 Printing Occupations

OAP - 10
OAP - 31
OAP - 32

66 Wood Machining Occupations

OAP - 10
OAP - 22

67 Occupations in Machining Stone, Clay, Glass, and Related Materials

OAP - 34

68 Textile Occupations

OAP - 18
OAP - 26
OAP - 27
OAP - 28
OAP - 29
OAP - 31
OAP - 32
OAP - 35

69 Machine Trades Occupations, N.E.C.

OAP - 10
OAP - 18
OAP - 28
OAP - 31
OAP - 32
OAP - 33
OAP - 34
OAP - 35

70 Occupations in Fabrication, Assembly, and Repair of Metal Products, N.E.C.

OAP - 16
OAP - 17
OAP - 22
OAP - 27
OAP - 29
OAP - 31
OAP - 34
OAP - 35

71 Occupations in Fabrication and Repair of Scientific and Medical Apparatus, Photographic and Optical Goods, Watches and Clocks, and Related Products

OAP - 10
OAP - 17
OAP - 22
OAP - 26
OAP - 27
OAP - 28
OAP - 31
OAP - 34
OAP - 35

SUMMARY TABLE

Relationsnip of OAP's to DOT OGA's

72 Occupations in Assembly and Repair of Electrical Equipment

OAP - 10
OAP - 11
OAP - 12
OAP - 16
OAP - 24
OAP - 27
OAP - 31
OAP - 33
OAP - 34
OAP - 35

73 Occupations in Fabrication and Repair of Products Made from Assorted Materials

OAP - 10
OAP - 31
OAP - 34

75 Occupations in Fabrication and Repair of Plastics, Synthetics, Rubber, and Related Products

OAP - 31
OAP - 32

76 Occupations in Fabrication and Repair of Wood Products

OAP - 25
OAP - 28

77 Occupations in Fabrication and Repair of Sand, Stone, Clay, and Glass Products

OAP - 31
OAP - 32

78 Occupations in Fabrication and Repair of Textile, Leather, and Related Products

OAP - 14
OAP - 15
OAP - 26
OAP - 28
OAP - 29
OAP - 32
OAP - 35

79 Bench Work Occupations, N.E.C.

OAP - 22
OAP - 31
OAP - 33
OAP - 35

SUMMARY TABLE

Relationship of OAP's to DOT OGA's

80 Occupations in Metal Fabricating, N.E.C.

OAP - 10
OAP - 15
OAP - 16
OAP - 20
OAP - 22
OAP - 24
OAP - 27
OAP - 29
OAP - 31
OAP - 32
OAP - 35

81 Welders, Flame Cutters, and Related Occupations

OAP - 27
OAP - 34

82 Electrical Assembling, Installing, and Repairing Occupations

OAP - 5
OAP - 10
OAP - 11
OAP - 17
OAP - 20

84 Painting, Plastering, Waterproofing, Cementing, and Related Occupations

OAP - 25

86 Construction Occupations, N.E.C.

OAP - 10
OAP - 14
OAP - 15
OAP - 16
OAP - 20
OAP - 22
OAP - 25

89 Structural Work Occupations, N.E.C.

OAP - 29

90 Motor Freight Occupations

OAP - 19

91 Transportation Occupations, N.E.C.

OAP - 3
OAP - 19

SUMMARY TABLE

Relationship of OAP's to DOT OGA's

92 Packaging and Materials Hnadling Occupations

OAP - 18
OAP - 19
OAP - 22
OAP - 28
OAP - 31
OAP - 32
OAP - 33
OAP - 35

95 Occupations in Production and Distribution of Utilities

OAP - 8
OAP - 19
OAP - 27

96 Amusement, Recreation, and Motion Picture Occupations, N.E.C.

OAP - 15

97 Occupations in Graphic Art Work

OAP - 5
OAP - 11
OAP - 16
OAP - 30
OAP - 31
OAP - 32
OAP - 36

DOT title and code	OAP No.
Absorption-Plant Operator, 542.280	17
*Accountant, 160.188, S-114	2
Accountant, Budget, 160.188	2
Accountant, Cost, 160.188	2
Accountant, Public, 160.188	2
Accountant, Tax, 160.188	2
Accounting Clerk, 219.488	7
Accounting-Machine Serviceman, 633.281	31
Accounting, Systems, 160.188	2
Adding-Machine Operator, 216.488	23
*Adding-Machine Serviceman, 633.281, S-234	31
*Adjustment Clerk, 241.368	6
Adjuster, Electrical Contacts, 724.381	10
Air-Conditioning Engineer, 007.081	1
*Air-Conditioning-Unit Installer, 827.884, S-102	17
*Aircraft-and-Engine Mechanic, 621.281, S-111	24
*Aircraft Assembly Occupations, Selected (several codes), S-76	22
*Aircraft Mechanic, Armament, 801.381, S-69	20
Aircraft Mechanic, Heat and Vent, 801.781	22
*Aircraft Mechanic, Plumbing and Hydraulics, 862.381, S-76	22
*Aircraft Mechanic, Rigging and Controls, 801.381, S-76	22
Airport Engineer, 005.081	1

Alphabetical Index of Occupations

DOT title and code	OAP No.
*Air-Traffic-Control Specialist, Tower, 193.168, S-256	3
*Apple Packer, 920.887, S-116	32
*Appliance-Cord Assembler, 723.885, S-244	34
Absorber, 700.884	31
Armature Bander, 724.884	33
Armoring-Machine Operator, 691.885	27
*Asparagus Sorter, 529.687, S-374	34
*Assembler I, 723.884	22
Assembler, 731.884, S-134	34
*Assembler, Aircraft Power Plant, 621.381, S-76	22
*Assembler, Aircraft, Structures and Surfaces, 806.381, S-76	22
*Assembler, Automobile, 806.887, S-101	32
*Assembler, Component, 723.884, S-191	35
*Assembler, Dry Cell and Battery, 727.887, S-66	35
Assembler, Electrical Wire Group, 728.884	27
Assembler, Gold Frame, 713.884	34
Assembler, Production, 706.887	17
*Assembler, Radiosonde, 722.884, S-81	35
*Assembler, Small Parts, 706.884	27
Assembler, Toy Voices, 731.887	34
Assessor, 188.188	2
Attendant, Lodging Facilities, 329.878	9

Alphabetical Index of Occupations

DOT title and code	OAP No.
*Auditor, 160.188, S-114	2
*Automobile-Body Repairman Metal, 807.381, S-313	10
Automobile-Generator Repairman, 721.281	11
*Automobile Mechanic, 620.281, S-43	11
Automobile-Radiator Man, 620.381	11
Automobile Upholsterer, 780.381	35
Automotive Engineer, 007.081	1
Automotive-Maintenance-Equipment Serviceman, 620.281	20
Avocado Packer, 920.887	32
Awning Assembler, 787.782	32
Awning Binder, 787.782	32
Back Joiner, 753.887	32
*Bag-Machine Operator, 649.885, S-137	28
Bag-and-Sack Sewer, 787.782	32
*Balance Assembler, 715.884, S-151	26
Balance Clerk, 216.388	13
*Balance Truer II, 715.884, S-150	27
*Balance-Wheel-And-Impulse-Pin Subassembler, 715.887, S-150	27
*Balling-Machine Operator II, 689.885, S-295	31
*Banking Adjuster, 715.781, S-151	26
*Barrel-Arbor Assembler, 715.887, S-152	31
*Baser, 692.885, S-27	35

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
*Batch-Still Operator, 552.885	19	*Bookkeeper I, 210.388, S-184	7
*Battery Loader, 683.886, S-248	35	Bookkeeper II, 210.388	7
Binder I, 786.782	32	Bookkeeping-Machine Operator I, 215.388, S-5	23
Binder II, 787.782	32	Booster Inspector, 609.684	32
*Bindery Workers (several codes), S-34	31	Boring-Machine Operator, 606.782	22
Binding Folder, Machine 788.884	35	Boring-Machine Operator, 666.782	22
Blind-Piping-Machine Operator, 786.782	32	Box Maker, Paperboard, 794.884	35
Blueprint Trimmer, 920.887	32	Braiding-Machine Operator, 786.782	32
Boatbuilder, Wood, 860.381	25	*Bricklayer, 861.381, S-107	14
Bobbin Winder, Machine, 682.885	28	Bricklayer, Refractory Brick, 361.381	14
*Bomb-Fuse-Parts Assembler, 737.884, S-24	31	Bricklayer, Sewer, 861.381	14

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
Brim Stitcher, 787.782	32	Buttonhole Maker, 788.884	28
Budget Clerk, 219.388	7	Button-Sewing-Machine Operator, 786.885	32
Bundler, 902.887	33	Buyer, Grain I, 162.168	4
*Bundler, Laundry, 920.687, S-292	33	*Cabinetmaker, 660.280, S-100	10
*Burler, 689.684, S-75	32	*Cable Maker, 726.884, S-160	12
*Burrer, 715.884, S-153	31	Cable Swager, 709.884	29
*Burrer, Machine, 603.885, S-152	31	Calciminer, 840.781	25
Bus Mechanic, 620.281	11	*Calculating-Machine Operator, 216.488, S-90	23
Button Facer, 786.782	32	*Calculating-Machine Serviceman, 633.281, S-234	31
Buttonhole Facer, 786.782	32	*Candy Packer, 920.887, S-193	35
Buttonhole-Machine Operator, 786.885	32	*Candy-Wrapping-Machine Operator, 920.885 S-99	32

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
*Cannery Worker, 529.886, S-121 and S-122	35	*Case Worker, 195.108, S-175	3
*Capacitor Winder, 726.884, S-281	34	*Cash-Register Serviceman, 633.281, S-234	31
*Cap Maker, 784.884	32	*Casing Tier, 529.887, S-35	35
*Carding-Machine Operator, 681.885, S-50	18	Celluloid Trimmer, 732.884	32
*Carpenter, 860.381, S-11	25	Cellophane Wrapper, Machine, 920.885	35
*Carpet Layer, 299.381, S-185	25	*Cementer, Hand, 788.887, S-147	35
*Carton-Forming-Machine Operator, 641.885, S-306	28	*Cementer, Life Rafts, 751.887, S-94	32
Case Aid, 195.208	3	*Central-Office Operator, 235.862, S-9	21
*Case Coverer, 739.884, S-174	27	Chain-Mortiser Operator, 665.782	22
*Case Liner, 739.884, S-174	27	Chassis Assembler, 729.884	27
*Caser, 715.884, S-149	35	*Cheese Wrapper and Packer, 920.887, S-16	35

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
Chef, 313.131	10	*Claims Taker, Unemployment Benefits, 169.268, S-48	3
*Chemical Engineer, 008.081, S-36	1	*Clerk, General Office, 219.388, S-329	13
*Cherry Packer, 920.887, S-116	32	*Clothes Designer, 142.081, S-88	15
*Cherry Sorter, 529.687, S-116	32	Cloth Examiner, Hand, 781.687	29
Chicken Boner, 525.887	35	Cloth Joiner, Tents, 787.782	32
Chin-Strap Sewer, 787.782	32	Coding Clerk, 219.388	6
Chucking-Machine Operator, 665.782	22	*Coil Assembler, 706.884, S-102	33
*Citrus-Fruit Packer, 920.887, S-116	32	*Coil Winder II, 724.884, S-220	33
*Civil Engineer, 005.081, S-36	1	Coining-Press Operator, 611.885	32
*Claim Adjuster, 241.168, S-186	6	Coke-Oven Mason, 861.381	14
Claim Examiner, 168.288	6	*Cold-Mill Operator, 613.782, S-98	26

Alphabetical Index of Occupations

DOT title and code	OAP No.
Collection Clerk, 240.388	9
Combustion Engineer, 008.081	1
Commissary Man, 185.168	12
*Compositor I, 973.381, S-51	36
Compound Mixer, 505.885	19
Compression-Molding-Machine Tender, 556.885, S-218	35
Comptometer Operator, 216.488, S-90	23
Construction Engineer, 005.081	1
Continuity Clerk, 209.388	36
Control Clerk, 221.387	19
*Cook, 313.381, S-238	10
Cook, Broiler, 313.381	10
Cook, Camp, 315.381	10
Cook, Dessert, 313.381	10
Cook, Fry, 313.381	10
Cook, Mess, 315.381	10
Cook, Pastry II, 313.381	10
Cook, Railroad, 315.381	10
Cook, Sauce, 313.381	10
Cook, Soup, 313.381	10
Cook, Vegetable, 313.381	10
Coppersmith, 862.281	16

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
*Copy Holder, 209.588, S-108	12	*Counterman, Automotive Parts, 289.358, S-157	9
Copyist, 142.281	15	Counterman, Cafeteria, 311.878	31
*Corn-Cutting-Machine Operator, 529.886, S-121	35	*Counterman, Lunchroom or Coffee Shop, 311.878, S-164	31
*Corn-Husking-Machine Operator, 529.886, S-121	35	Counter Molder I, 690.885	28
Corner-Brace-Block-Machine Operator, 667.782	22	Counter-Supply Man, 319.887	31
*Cosmetologist, 332.271, S-71	21	Court Reporter, 202.388	36
Cost Clerk, 219.488	13	Crab Picker, 529.886	31
Costumer, 969.261	15	Credit Clerk I, 249.368	6
*Counselor, Camp, 159.228, S-209	13	*Crusher Inspector, 619.381, S-97	25
*Countergirl, 311.878, S-164	31	*Crystal Finisher, 726.884	35
Countergirl, Cafeteria, 311.878	31	Crystal-Unit Assembler, 726.884	33

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
Curtain-Roller Assembler, 739.884	35	*Dental Hygienist, 078.368, S-54	5
Customs Appraiser, 168.287	19	*Dental-Laboratory Technician, 712.381, S-285	28
Customs Examiner, 168.287	19	Design Engineer, Oil Well Equipment, 007.081	1
Customs Inspector, 168.168	19	*Dialer, 715.884, S-149	35
Customs Verifier, 168.287	19	Dictating-Transcribing-Machine Serviceman, 633.281	31
*Cutter, Hand, 529.887, S-122	35	*Die Cutter, 699.782, S-123	28
*Cutter, Machine, 529.886, S-121	35	*Die Maker, 739.381, S-307	10
*Cylinder-Press Man, 651.782, S-40	10	Diesel-Engine Mechanic, Automobile, 625.281	11
Dado Operator, 665.782	22	*Dietitian, 077.168, S-55	3
*Dental Assistant, 079.378, S-202	25	*Digital-Computer Operator, 213.382, S-286	7
Dental Ceramist, 712.281	28	*Director, Funeral, 187.168, S-93	3

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
Dispatcher, 912.168	3	Electric-Bridge-or-Gantry Crane Operator, 921.883	28
*Dispatcher, Motor Vehicle, 919.168, S-251	3	*Electric-Fan Assembler, 723.884	27
Dissolver Operator I, 558.782	19	*Electric-Motor Assembler, 721.884, S-21	35
Dovetail-Machine Operator, 665.782	22	Electric-Motor Winder, 721.884	27
Driller, 700.884	31	Electric-Range Assembler, 723.884	27
*Drill-Punch Operator, 649.885, S-34	31	Electric-Sign Assembler, 729.884	34
Dry-Press Operator, 575.782	30	*Electrical-Control Assembler, 729.884	27
Dump-Truck Driver, 902.883	19	*Electrical Engineer, 003.081, S-36	1
*Duplicating-Machine Serviceman, 633.281, S-234	31	Electricial Repairman, 829.281	24
*Egg Breaker, 521.887	32	*Electrician, 824.281, S-72	24
Egg Packer, 920.887	32	*Electrician, Airplane, 825.281, S-69	20

DOT title and code	OAP No.	DOT title and code	OAP No.
Electrician, Automotive, 825.281	11	Electrotherapist, 079.378	5
Electrician, Chief, 824.138	24	Electrotyper, 974.381	11
Electrician, Foreman, 825.131	24	Elevator Repairman, 829.281	24
Electrician, Machine Shop, 829.281	24	*Embalmer, 338.381, S-93	3
Electrician, Powerhouse, 820.281	24	*Embossing-Press Operator, 659.782, S-40	10
Electrician, Stage, 824.381	24	*Embroiderer, Hand, 782.884	35
Electrician, Yard, 825.381	24	*Employment Clerk, 205.368, S-105	9
Electronic Engineer, 003.081	1	*Employment Interviewer I, 166.268, S-48	3
*Electronics Assembler, 726.781, S-310	16	End-to-End Sewer, 787.782	32
*Electronics Mechanic, 828.281, S-103	5	*Endshake Adjuster, 715.885, S-151	26
*Electronic Technician, 003.181, S-293	3	Engine-Lathe Set-Up Operator, 609.380	22

Alphabetical Index of Occupations

DOT title and code	OAP No.
Engine-Lathe Set-Up Operator, Tool, 604.280	28
*Engraving-Press Operator, 651.782, S-40	10
Envelope-Machine Operator, 641.885	31
Estimator, 160.288	2
Expediter I, 222.368	19
Explosive Operator I, 737.887	27
Eyelet-Machine Operator II, 786.885	32
Facial Operator, 332.271	21
Fagoting-Machine Operator I, 786.782	32
*Fancy Stitcher, 690.782, S-159	31
*Farm Hand, Tobacco, 405.887	31
*Fettler, 779.884, S-22	22
File Clerk I, 206.366	6
*File Clerk II, 206.388, S-38	6
Filer, Hand, 705.884	31
Film Loader, 976.887	32
Filter Operator, 599.885	19
*Final Inspector, Movement Assembly, 715.687, S-149	35
Final Inspector, Paper, 539.387	35
Finisher, 613.782	26
*Fire Fighter, 373.884, S-119	10
*Fireman II, 373.884, S-119	10

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
*Firesetter, 692.380, S-133	18	*Fork-Lift-Truck Operator, 922.883, S-131	18
*Fireworks Assembler, 737.887, S-52	27	*Fountain Girl, 219.878, S-311	32
Fish Cleaner, 525.884	35	*Fruit Sorter, 529.687, S-116	32
Fishing-Reel Assembler, 732.884	32	Fur-Cutting-Machine Operator, 585.885	28
*Fishing-Rod Assembler, 732.884, S-79	32	Furnance-Installer-and-Repairman, Hot Air, 869.281	10
Floor Girl, Cafeteria, 311.878	31	*Furniture Upholsterer, 780.381, S-57	35
*Floor Layer, 864.781, S-185	25	*Garment Folder, 789.887, S-63	35
Folder, Hand, 788.884	35	*Garment Packer, 920.887, S-361	19
*Folder, Hand, 794.887, S-34	31	Gas-Appliance Serviceman, 637.281	10
Food Checker II, 216.488	9	Gas-Distribution Engineer, 007.187	1
Food Tabulator, Cafeteria, 216.588	9	Gas-Fitter, 862.381	20

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
Gas-Governor Repairman, 710.781	10	Golf-Ball Molder, 559.885	32
*Gasoline-Engine Assembler, 806.781	35	*Goggle-Glass Cutter, 713.884, S-148	34
Gasoline-Truck Operator, 922.883	18	Grid Trimmer, 725.887	31
*Gatherer, 794.887, S-34	31	*Grocery Checker, 299.468, S-145	9
Gathering-Machine Operator, 786.782	32	Groover, 713.884	34
Gathering-Machine, Set-Up Man, 653.780	31	Group Worker, 195.108	34
*General Labor Worker, 899.887, S-364	29	*Guide Setter, 613.381, S-367	30
*General Practitioner, 070.108, S-39	1	*Gyroscope Assembler, 710.884, S-253	27
Glass Cutter, 677.885	34	*Hairspring Inspector I, 715.381, S-151	26
Glove Former, 363.887	35	*Hairspring Pinner, 715.887, S-151	26
*Glove Sewer, 787.782, S-4	32	*Hairspring Solderer, 715.887, S-150	27

Alphabetical Index of Occupations

DOT title and code	OAP No.
*Hairspring Vibrator, 715.381, S-150	27
Hair Stylist, 332.271	21
Hair Tinter, 332.271	21
*Hand Rammer, 518.381, S-365	30
*Hands Assembler, 715.884, S-149	35
Hat Designer, 142.081	15
Head-Bander-And-Liner Operator, 653.782	31
Header-And-Chopper Assembler, 724.884	27
Heating Engineer, 007.151	1
Heel Compressor, 690.885	28
Hemming-And-Tacking-Machine Operator, 787.885	32
Hemstitching-Machine Operator, 787.885	32
Highway Engineer, 005.081	1
Hobbing-Press Operator, 617.782	31
Home Economist, 096.128	3
*Hosiery Looper, 689.782, S-119	27
*Hot-Mill Operator, 613.782, S-98	36
Hydraulic Engineer, 005.081	1
Hydroelectric-Machinery Mechanic, 631.281	20
Hydroelectric-Station Operator, 952.782	27
Information Operator, 235.862	21
*Ingot Mold Foundry Jobs, 518.381 and 518.883, S-365	30

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
Injection-Molding Machine Operator, 556.782	35	Instrument Maker, 729.281	10
*Inserter, Carbon Tissue, 794.887, S-34	31	Instrument-Panel Assembler, 706.884	22
Inspector, 649.487	35	*Instrument Repairman I, 710.281, S-318	10
Inspector I, 737.387	32	*Insulating-Machine Operator, 691.782, S-308	31
Inspector, Assemblies and Installations, 806.381	32	Internal-Combustion-Engine Designer, 007.081	1
*Inspector, Balance Wheel and Impulse Pen, 715.687, S-150	27	Inventory Clerk, 223.388	13
*Inspector, Casing, 715.687, S-149	35	Joiner, 865.381	15
Inspector, Floor, 602.382	32	*Key-Punch Operator, 213.582, S-180	9
*Inspector, Marked Reels, 720.687	35	Kitchen Helper, 318.887	14
*Inspector, Printed Forms, 615.687, S-34	31	Knitter Mechanic, 685.380	27
*Inspectors, Selected, 619.881 and 619.687, S-97	25	Knitting Machine Fixer, Socks, 689.280, S-91	27

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
Knitting-Machine Operator, Full Fashioned Hosiery, 684.782	35	*Lens Cutter II, 713.884, S-148	34
*Knockoutman, 519.887, S-365	30	*Librarian, 100.168, S-299	4
*Laboratory Tester I, 029.281, S-7	8	*Light-Bulb Assembler, 692.885, S-56	34
Laborer, Bakery, 929.886	32	*Liner-And-Gasket Inserter, 715.887, S-149	35
Laborer, Stores, 922.887	19	Linker, 525.887	35
*Lancing Gager, 715.687, S-152	31	*Lint Remover, 715.887	35
Lathe Operator, Production, 604.885	22	Lock-Corner-Machine Operator, 665.782	22
Laundry-Machine Mechanic, 629.281	20	Louis-Heel Fitter, 788.884	35
Lay-Out Man II, 809.781	10	*Luggage-Hardware Assembler, 706.884, S-136	35
Leacher, 551.885	19	*Machine Attendant, 619.885, S-233	34
Leather Tooler, 763.884	25	Machine Feeder, 619.886	32

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
*Machine Operators, Selected, S-98 and S-257	26	Manager, Retail General Merchandise, 185.168	12
Machinery and Tool Designer, 007.081	1	Manager, Retail Variety, 185.168	12
*Machinist I, 600.280, S-12	25	Manicurist, 331.878	21
Machinist, Outside, 623.281	25	Manipulator, 613.782, S-367	30
*Main-Arbor-And-Hook Assembler, 715.887, S-152	31	*Marker II, 209.588	32
Make-Up Man, 973.381	36	Master Tailor, 785.261	26
*Manager, City Circulation, 163.118, S-23	4	*Material Coordinator, 221.168, S-64	19
Manager, Recreation Establishment, 187.168	7	Material Handler, 929.887	35
*Manager, Retail Food, 185.168, S-225	12	*Meat Cutter, 316.884, S-349	11
Manager, Sales, 163.118	4	*Meat Packing Occupations, Selected (several codes), S-35	35
*Manager, Theater, 187.168, S-30	12	Mechanical Assembler, 806.884	22

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
*Mechanical Engineer, 007.081, S-36	1	*Millwright, 638.281, S-177	20
*Mechanism Assembler, 715.884, S-151	26	Mine Superintendent, 181.118	19
*Medical Assistant, 079.368, S-237	9	Mitten Stitcher, 787.782	32
*Mender, 782.884, S-75	32	*Model-Airplane Assembler, 731.884, S-134	34
*Merchandise Packer, 920.887, S-165	33	Model Maker, 709.381	10
Metal-Bed Assembler, 706.884	34	Monomer-Purification Operator I, 551.782	19
*Metal-Chair Assembler, 739.884, S-195	34	Motor Repairman, 620.381	11
*Metal Fabricator I, 619.380, S-235	32	Motorcycle Repairman, 620.281	11
*Mill-End Inspector, 619.381, S-97	25	*Mounter I, 726.887, S-8	35
Milling-Machine Operator, Production, 605.885	22	*Mounting Operator, 976.885, S-161	32
*Mill Inspector, 619.381, S-97	25	Multiple-Cut-Off-Saw Operator, 667.782	22

Alphabetical Index of Occupations

DOT title and code	OAP No.
*Multiple-Photographic-Printer Operator, 976.782, S-86	30
Nailing-Machine Operator, 669.782	22
*Napkin Packager, 920.885, S-372	33
*New-Era-Unit Operator, 641.782, S-34	31
*Nut Sorter, 521.887, S-96	32
Odometer Assembler, 710.884	34
*Office-Machine Serviceman, 633.281, S-234	31
*Offset Pressman, 651.782, S-40	10
*Oiler, 715.884, S-151	26
*Olive Sorter, 529.687, S-116	32
*Onion Corer, 529.886, S-269	35
Order Clerk II, 249.368	19
Order Detailer, 221.388	19
*Outboard-Motor Assembler, 806.781, S-13	31
*Overlay Cutter, 651.381, S-40	10
Packager, Hand, 920.887 and 928.887	35
*Packager, Solutions and Syringes, 920.885, S-3	35
*Packer, 920.887, S-116	32
*Packer, Sausage and Weiner, 920.887, S-35	35
*Paint-Brush Maker, 733.884	32
*Painter, 840.781, S-203	25
*Pairer, 684.687, S-60	29

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
Pairer, Odds, 684.687	29	Parachute-Harness Maker, 787.782	32
*Pairing-Machine Operator, 691.885, S-308	31	Parachute-Panel Joiner, 787.782	32
Pantry Man, 31 7.884	31	Parachute Repairer, 787.782	32
Paper-Bag Inspector, 649.387	29	Parachute Taper, 787.782	32
Paper Cutter, 690.885	35	*Paster, 773.884, S-112	32
Paper-Pattern Folder, 794.887	31	Paste-Up-Man, 979.381	5
*Paper Sorter and Counter, 649.687, S-104	31	Pattern Chart-Writer, 789.381	15
Parachute-Accessories Attacher, 787.782	32	*Payoff Operator, 503.885, S-98	26
Parachute-Cover Sewer, 787.782	32	*Pear Packer, 920.887, S-116	32
Parachute-Crown Sewer, 787.782	32	*Peeling-And-Coring-Machine Operator, 529.886, S-92	32
Parachute-Cushion Installer, 787.782	32	*Perforating-Machine Operator, 659.885, S-34	31

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
*Pharmacist, 074.181, S-37	2	Plant Engineer, 007.187	1
*Photogrpaher, Lithographic, 972.382, S-223	5	*Platen-Press Man, 651.782, S-40	10
Photostat-Operator, 979.382	30	*Plumber, 862.381, S-61	20
*Physical Therapist, 079.378, S-347	8	*Plum Packer, 920.887, S-116	32
Pie Maker I, 313.781	10	Plywood Patcher, Hand, 761.884	28
*Pinion Reamer, 715.887, S-152	31	Posting Clerk, 219.588	23
*Pinsetter Mechanic, Automatic, 829.281, S-284	24	Posting-Machine Operator I, 219.588	23
*Pipe and Coupling Sizer, 619.381, S-97	25	*Poultry-Dressing Worker, 525.887, S-26	35
*Pipe Fitter, 862.381, S-61	20	Powerman I, 952.782	27
Pipe Fitter, Sprinkler Systems, 862.381	20	Powerhouse Repairman, 631.281	27
*Pipe Walker, 619.381, S-97	25	*Power-Lawn-Mower Assembler, 706.884, S-141	16

DOT title and code	OAP No.	DOT title and code	OAP No.
Power-Plant Attendant, 952.782	27	Price Clerk, 209.588	6
*Power-Plant Operator I, 952.782, S-106	27	*Printer-Slotter Operator, 651.782, S-369	32
Power-Transformer Assembler, 820.381	10	Procurement Inspector, 806.384	32
Precipitator I, 511.885	19	*Production-Machine Operator, 609.885, S-135	22
Precision Assembler, Bench, 706.781	22	Production Superintendant, 183.118	8
*Presser, Hand, 363.884, S-138	35	*Programmer, Business, 020.188, S-314	1
Presser II, 559.885	30	*Programmer, Engineering and Scientific, 020.188, S-316	1
Pressing-Machine Operator I, 583.885	35	Projection Printer, 976.381	30
*Pressman, O-Rings, 559.885, S-17	32	*Proofreader I, 209.688, S-108	12
*Press Man Occupations, Selected, 651.782, S-40	10	*Proprietor, Manager, Retail Automotive Service, 185.168, S-298	9
Pressroom Worker, Fat, 559.885	19	*Psychiatric Aid, 355.878, S-287	18

Alphabetical Index of Occupations

DOT title and code	OAP No.
*Psychiatric Technician, 079.368, S-327	6
Public-Address Serviceman, 823.281	24
Public-Health Service Officer, 187.118	1
Puff Ironer, 363.887	35
Pumpman, 914.885	19
*Punch-Press Operator I, 615.782, S-44	32
Punch-Press Operator II, 617.885	34
Purification Operator, 542.280	17
*Put-in-Beat Adjuster, 715.884, S-150	27
Radio-Chassis Aliner, 720.884	24
Radio Engineer, 003.081	1
*Radio Repairman, 720.281, S-113	24
Radio-Transmitter Assembler, 726.781	27
*Radiologic Technologist, 078.368, S-80	8
Railroad Engineer, 005.081	1
*Reamer, 606.885, S-152	31
Receptionist, 237.368	9
*Record-Press Tender, 556.885, S-46	30
Reference Clerk, 209.388	9
Refrigeration Engineer, 007.081	1
*Refrigeration Mechanic, 637.281	10
Register Repairman, 710.381	22

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
*Repairman, 715.281, S-151	26	*Rolling Mills Jobs, 613.381 and 613.782, S-367	30
*Retaining-Spring Attacher, 715.887, S-152	31	Rotor-Coil Taper, 724.884	34
Retort-or-Condenser Pressman, 575.782	30	Rubber-Heel-and-Sole Pressman, 559.885	32
*Rewind Operator, 509.782, S-98	26	Rug Hemmer II, 787.885	32
Ribbon-Machine Operator, 786.782	32	Safety Inspector, 168.168	19
*Rifter, 571.884, S-1	28	Salesman, Floor Coverings, 274.358	9
*Ring Maker III, 700.884, S-143	31	Salesman, Marine Supplies, 280.358	9
Riveter, Aircraft, 800.884	27	*Salesperson, General, 289.458, S-276	9
Riveter, Jewelry, 700.884	31	Salesperson, Orthopedic Shoes, 263.258	9
*Rocking-Bar Adjuster, 715.887, S-152	31	Salesperson, Parts, 289.358	9
Roller-Machine Operator, 583.885	35	Sample-Body Builder, 693.380	10

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
Sample Distribution, Crew Supervisor, 299.138	4	*Second Helper-Open Hearth, 512.884, S-356	30
*Sand-Slinger Operator, 518.883, S-365	30	Secretary, 201.368	36
Sanitary Engineer, 005.081	1	*Service Engineer, 638.281, S-183	10
Scale Mechanic, 633.281	22	Sewer, Hand, 782.884	26
*Scaler, Sliced Bacon, 920.887, S-35	35	*Sewing-Machine Operator, 787.885, S-4	32
Scalp-Treatment Operator, 339.371	21	Sewing-Machine Operator, Automatic, 787.885	32
*Screwdown Operator, 613.782, S-367	30	Sewing-Machine Operator, Cotton Garments, 786.782	32
Screw-Machine Set-Up Operator, Tool, 604.280	28	Sewing-Machine Operator, Leather Garments, 786.782	32
*Seamer, 787.782, S-78	35	*Sewing-Machine Operator, Lingerie, 786.782, S-4	32
Seamer Mechanic, 626.281	22	*Sewing-Machine Operator, Men's Tailored Garments, 786.782, S-4	32
*Seamstress, 785.381, S-59	26	*Sewing-Machine Operator, Regular Equipment, 786.782, S-4	32

DOT title and code	OAP No.
*Sewing-Machine Operator, Style Garments, 786.782, S-4	32
Sewing-Machine Operator, Women's Coats and Suits, 786.782	32
Sewing-Machine Operator, Work Clothing, 786.782	32
*Sewing-Machine Repairman, 639.281, S-319	22
Shaper Operator, 665.782	22
*Sheet-Metal Worker, 804.281, S-82	16
Sheet Sewer, 787.782	32
Shell Assembler, 737.884	31
*Shipfitter, 806.381, S-45	10
Shirring-Machine Operator, 787.782	32
Shirt Hemmer, 786.782	32
Shoe Cleaner, 788.887	32
*Shrimp Picker, 529.886, S-265	31
*Silk Finisher, 363.781, S-138	35
Skein Winder, 681.885	35
*Skin Peeler, 529.887, S-35	35
Skirt Hemmer, 786.782	32
Slip-Cover Seamstress, 787.782	32
Slitting-and-Cutter Operator, 640.782	35
*Slitting-Machine Operator I, 699.782	35
*Slitting-Machine Operator II, 615.782, S-98	26
Slotter Operator, 640.885	31

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
Snap-Fastener-Machine Operator, 699.885	32	*Staker, 715.884, S-152	31
Snap-Fastener-Machine Operator, 786.885	32	Statistician, Applied, 020.188	2
Soils Tester, 029.281	8	Steam-Distribution Engineer, 007.081	1
*Solderer, Production Line, 814.884, S-142	29	Steam Fitter, 862.381	20
Solderer, Torch, 807.884	29	*Steam-Power-Plant Operator, 952.782, S-340	8
*Sorter, 529.886, S-122	35	*Stenographer, 202.388, S-10	36
Speaking-Units Assembler, 729.884	35	Stenographer, Print Shop, 202.388	36
Specker, 689.684	32	Stenotype Operator, 202.388	36
*Spinner, Ring Frame, 682.885, S-53	35	*Stereotyper, 975.782, S-176	11
Spooling-Machine Operator, 681.885	18	*Stillman, 542.280, S-68	17
Spray-Gun Repairman, 630.381	22	Stillman, Gas Plant, 542.280	17

Alphabetical Index of Occupations

DOT title and code	OAP No.
Stock Cutter, 667.782	22
*Straightener, 709.884, S-152	31
Straightening-Roll Operator, 613.782	26
Strap-Machine Operator, 786.782	32
*Stripper, 971.381, S-140	16
*Structural-Steel Lay-Out Man, 809.281, S-344	15
Surgeon I, 070.101	1
*Survey Worker, 249.268, S-6	3
*Sweep-Spring Attacher, 715.887, S-149	35
Swing-Type-Lathe Operator, 664.782	22
*Systems Analyst, Business-Electronic-Data Processing, 012.168, S-315	1
Table Assembler, Motel, 739.884	34
*Table Worker, 920.887, S-28	35
Tabulating-Equipment Mechanic, 633.281	31
*Tabulating-Machine Operator, 213.782, S-42	9
Tacking-Machine Operator, 787.885	32
Tailor, Women's-Garment Alteration, 785.381	26
Taping-Machine Operator, 786.782	32
*Tea-Bag Operator, 920.885, S-301	22
*Teacher, Elementary School, 092.228, S-87	3
*Teacher, Secondary School, 091.228, S-87	3
*Teacher, Nursery School, 359.878, S-47	6

Alphabetical Index of Occupations

DOT title and code	OAP No.
Telegraph Engineer, 003.081	1
Telegraphic-Typewriter Operator, 203.588	36
Telephone Engineer, 003.081	1
Telephone Operator, 235.862	21
Television Engineer, 003.081	1
*Television Service-and-Repairman, 720.281, S-113	24
*Template Maker, Aircraft, 601.381	10
Template Maker, Structural Steel, 601.381	10
Terminal Assembler, 726.884	31
Tenoner Operator, 669.782	22
Thermostat Assembler, 710.884	17
*Threader, 725.887, S-27	35
*Thread Inspector, 619.687, S-97	25
*Ticket-Machine Operator, 208.782	32
Tier-Lift-Truck Operator, 922.883	18
*Tile Placer, 573.887, S-112	32
Tile Setter, 861.781	14
*Tile Sorter, 573.687, S-112	32
*Timing-Machine Operator, 715.585, S-151	26
*Tipper, 977.884, S-34	31
*Tire Builder, Automobile, 750.884, S-267	31
Tire Builder, Truck, 750.884	31

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
Tobacco Packer, 920.887	32	Truck-Body Builder, 807.281	10
*Top Stitcher, 690.782, S-159	31	Truck Mechanic, 620.281	11
*Toy-Train Assembler, 731.884, S-134	34	Tube Splicer I, 750.884	32
Tracer, 222.368	19	Tuck Pointer, 861.884	14
*Tractor-Trailer-Truck Driver, 904.883, S-124	19	Tucking-Machine Operator, 787.782	32
Tractor Mechanic, 620.281	11	Tuft-Machine Operator, 787.782	32
*Trailer-Tank-Truck Driver, 903.883, S-124	19	Turner, Machine, 770.884	31
*Train Inspector, 715.381, S-151	26	*Turret-Lathe Set-Up Operator Tool, 604.280, S-33	28
*Tray Leader, 715.887, S-152	31	*Twister Tender, 681.885	28
Treater, 549.782	19	*Typesetter-Perforator Operator, 208.588, S-297	36
*Trimmer, 529.886, S-122	35	Typewriter Operator, Automatic, 207.782	36

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
*Typewriter Serviceman, 633.281, S-234	31	Veneer Grader, 669.587	28
*Typist, 203.588, S-10	36	*Veneer Matcher, 669.687	28
Umbrella Sewer, 787.782	32	Veneer-Stock Grader, 769.687	28
*Underwriter, 169.188, S-14	2	*Venetian-Blind Assembler, 739.884, S-187	35
Universal-Winding-Machine Operator, 724.884	33	Verifier Operator, 213.588	9
Urban Planner, 199.168	1	Visor Maker, 787.782	32
Utilization Engineer, 007.081	1	Waiter, Informal, 311.878	14
Valve-Designing Engineer, 007.081	1	Waiter, Room Service, 311.878	14
*Vamp Stitcher, 690.782, S-159	31	*Waitress, 311.878, S-179	14
Vari-Typist, 203.582	36	Watchcase-Vulcanizer Tender, 553.885	32
Varnisher, 840.781	25	*Watch Making Jobs, Balance Wheel Assembly Department (several codes), S-150	27

Alphabetical Index of Occupations

DOT title and code	OAP No.
*Watch Making Jobs, Finishing Department (several codes), S-149	35
*Watch Making Jobs, Movement Assembly Department (several codes), S-151	26
*Watch Making Jobs, Sub-Assembly-Other Department (several codes), S-152	31
*Water Filterer II, 954.782, S-139	19
*Water-Treatment-Plant Operator, 954.782, S-342	8
*Waxed-Bag Machine Operator, 649.885, S-137	28
*Weaver, 683.782, S-115	26
*Web-Press Man, 651.782, S-40	10
*Weighing-Station Operator, 224.487, S-188	19
*Weight Checker, 529.886, S-122	35
Welder Arc, 810.884	27
Welder, Atomic, 810.884	27
*Welder, Combination, 812.884, S-126	27
Welder, Gas, 811.884	27
Welder, Spot I, 810.782	34
Welt Sewer, 787.782	32
*Wheel Inspector, 715.387, S-150	27
Wireman, Cable, 729.381	12
Wood-Carving-Machine Operator, 663.782	22
*Woodworking-Machine Operator, General, 669.782, S-144	22
*Wrapper, 902.887, S-34	31
*Wrapper Layer, 529.885, S-20	28

Alphabetical Index of Occupations

DOT title and code	OAP No.	DOT title and code	OAP No.
*Wrapper-Layer and Examiner, Soft Work, 529.885, S-20	28	Zipper Sewer, 786.782	32
*Wrapping-Machine Operator, 920.885, S-34	31		

COUNSELOR:S GUIDE TO THE USE OF DATA, PEOPLE, THINGS
CONCEPTS (DPT) IN INDIVIDUAL APPRAISAL

Table of Contents

Background 189
Data, People, Things as Maturation Influence 189
Use of DPT Guide in Individual Appraisal and Job Exploration 190
Arrangement of Interview Aid Sections of DPT Guide 191
Section I. Evaluating DPT Orientation 191
Section II. Rating Scales for DPT Level Potential 191

GUIDE TO THE USE OF DATA, PEOPLE, THINGS CONCEPTS IN INDIVIDUAL APPRAISAL

BACKGROUND

The concept of role plays an important part in vocational development theory. Role may be viewed in a variety of ways. One sense of role, widespread among people generally, derives from a person's characteristic manner of relating to data or ideas, people, and things. It is commonplace to hear remarks such as: "He's an idea man;" "I want to work with people;" "She's good with her hands and working with things." Almost anyone will know that aspiring to be a machine operator is also aspiring to live in a world dominated by physical objects and physical tasks; to become a salesman is to commit one's self to a life made up of social situations and face-to-face interactions with people; and going into bookkeeping is entering a "paperwork" world.

A data, people, things model of experience is congruent with the everyday orientation of so nearly everyone that it approaches "culture fairness" for any subculture: that of the scholar whose world is the campus community; the isolated hill dweller remote from urban mores; and the restless, overflowing population of the warren at a city's core.

Concepts of ideas or data, people, and things are little dependent upon verbal and other symbolic skills for understanding. They provide, in a sense, a logos for ordering reality as elemental as that of the Greeks -- fire, water, earth, and air. Any person, in any stage of development, can take a good hard look at himself and reflect upon the choices he has made in these terms, consciously and unconsciously, all his life. In thousands of little ways, all individuals have had lifelong experience in making choices which are essentially Data, People, Things choices.

DATA, PEOPLE THINGS AS MATURATION INFLUENCE

Data, People, Things involvements are characteristic of all pre-vocational experience, of growing up. During each year of childhood and adolescence, the growing individual has continuous experience with Data, People, and Things in different combinations of, and emphasis upon, roles required for different life situations. This growing-up progress is in large part guided, and his assumptions of roles frequently helped by, parents, teachers, and friends. During the course of his experience each individual is exposed to standards of achievement and forms of recognition which provide him with his personal criteria of satisfaction. He gradually develops a sense of which roles he is most apt with and which are most satisfying to him.

The counseling and guidance experience of later adolescence and adulthood in which the counselee seeks to develop his vocational self-concept, not only in relation to a field of work but also in terms of possible role or roles he might assume within a field, is part of his life adjustment. In the process of achieving employability and adjusting to employment, the person inevitably, if imperceptibly, integrates his general adjustment.

Vocational development theory makes the assumption that the individual will, in his leisure time and non-employed activities of his life, seek out roles most satisfactory to himself. He must seek role fulfillment and if he does not get it in the employment situation, he will seek it that more intensely in his non-vocational life. One function of employment counseling is to help bring about agreement between the individual's picture

of himself and the opportunities to be that kind of person in his work. If he cannot find, in the roles which his employed life provides, opportunity to be the kind of person he wants to be, he will be dissatisfied with his work.

USE OF DPT GUIDE IN INDIVIDUAL APPRAISAL AND JOB EXPLORATION

The concept of "fields of work" derives from the grouping of occupations in such a manner that there is a shared basic training and orientation. Considerable divergence, however, exists among individual jobs in specialized requirements and work role. Interest, it has been said, tends to be the chief determinent in the individual's selection of a work field. The particular role and functional level that he will attain within the field depends more upon motivation and aptitude.

This GUIDE is concerned with aiding a counselor to help a counselee explore work fields from the vantage of their Data, People, Things role possibilities. Its use comes after the full range of facts about the counselee are in and thematic trends recognized in relation to a field or fields. The consideration and choice of role possibilities within a field of work becomes the concluding refinement of the vocational plan.

The postulate is advanced that each person can function best at some range of Data, People, Things role possibility; that the Data, People, Things functions <u>together</u> define the role which is most effective for the person. The potential for role is not to be thought of as static. People are flexible and can adjust to Data, People, Things roles with varying emphasis. In projecting a career ladder, it is important to keep in mind the shifts in the Data, People, Things spectrum which <u>may</u> take place with increasingly responsible jobs. The DPT role potential may change with different stages of development in an individual's life.

A counselee as he looks at his life ahead needs to think not only in terms of entry roles but the whole complex of role possibilities which may characterize a work field. In looking at a field, he may view it only in the image of the beginning or perhaps the terminal job. His conception of the field of Power-Plant Operating, for example, may derive from an image of the Switchboard Operator controlling the flow of power in a generating station without realizing that to get there, the worker must first be a clean-up man and progress through junior roles before he becomes a Switchboard Operator.

Only by understanding the range of its role possibilities, can the counselee be supplied with a comprehensive perception of a work field so that he can test the reality of his expectations. Such an orientation should have meaning in both the counselee's satisfaction with the role he will play in his employed life and his capacity to function successfully in the role.

To aid a counselee clarify his role preferences as to Data, People, and Things involvements, the counselor must be able to evoke sufficient responses whereby significant clues to the counselee's leanings can be obtained and considered. This GUIDE is meant to serve as an interviewing aid for the counselor in this undertaking.

ARRANGEMENT OF INTERVIEW AID SECTIONS OF GUIDE

Section I. Evaluating DPT Orientation

The purpose of this section is to help the counselee explore his reactions to daily experiences and activities from the standpoint of their Data, People, Things significance. This can help him towards expression of his dreams and aspirations and also to get a realistic picture of how he feels about himself in relation to the world. Even the most inarticulate counselee can find the Data, People, Things aspects of reality so down-to-earth that he can immediately relate to them.

Section II. Rating Scales for DPT

This section consists of rating scales for each of the Data, People, Things concepts. Here the counselee can explore the role possibilities involved in the field of work. The role levels are defined and illustrated by "close-ups" of a worker who is functioning in such a role.

Generally speaking, the top roles on the scales are the more demanding ones and the lower ones on the scale the less demanding ones (although this is not absolutely so). The top roles are those which tend to involve a worker in the more complex processes of occupational socialization, require a total commitment of a person's psychological resources, and in turn provide the person with an identity which involves both personal meaning in the work and self-fulfillment in its accomplishment.

The lower roles tend to make minimal psychological and socialization demands on the worker (except for adaptability to routine), but involve him in anonymity, providing little sense of status and identity and posing scant challenge as to the significance of his work mission.

Section I. Evaluating DPT Orientation

The DATA orientation of a person relates to his capacity for, and inclination towards, roles in which he is involved with data or ideas. In such roles he maintains a mental set on symbols and abstractions and makes judgments based on concepts of the mind perceived through symbols (words, numbers, or notation of another kind).

The person strongly oriented towards data in preference to people or things

when waiting for a bus, might tend to read a book, paper, or magazine	rather than	observe cars go by OR strike up a conversation with another person
as a member of a science club, might take on the job of computing statistical studies	rather than	set up scientific apparatus OR visit community leaders to solicit donations for the Science Fair
as a boat enthusiast might prefer to draw plans for a model boat	rather than	teach a friend to sail a model boat OR build a model boat
to express interest in clothes might prefer to design a dress	rather than	make a dress OR go shopping with a friend and help her select a dress
as a member of an athletic club, might prefer to write up minutes of club meeting	rather than	sell tickets for club game OR mend damaged athletic equipment

in a job, might prefer to post figures in books of accounts	rather than	sit at a cash register and accept payments from customers OR gift wrap packages
as an outlet for an interest in mechanics, might prefer to read about how engines work and the principles of their construction	rather than	sell engines, explaining why one make is better than another OR examine engines which will not start to determine cause, and repair them
as a member of a theater club, might prefer to imagine and write up a dramatic incident	rather than	act out a dramatic incident OR build stage scenery for use in an amateur theatrical
in a job, might prefer to type neat, correctly spelled letters	rather than	maintain a telephone answering service OR arrange counter displays of notions
as a home chore, might prefer to clean out refrigerator, checking and discarding stale food	rather than	wash the windows OR telephone around to locate a TV repairman

The PEOPLE orientation of a person relates to his effectiveness in, and inclination towards, roles in which he is involved in direct interaction with people. This can be in a passive sense, as in a listening role, or it may be in a dominant sense, involving projection of own personality to arouse feelings in people, as admiration, trust, fear, approval, or other, depending upon purpose. In such roles mental set and receptivity are closely attuned to the behavior of others. A keen sense of awareness is maintained of such things as facial expressions, postures, mannerisms, tone of voices, gestures, and what is said.

The person strongly oriented towards <u>people</u> in preference to <u>data</u> or <u>things</u>

when waiting for a bus, might tend to pass the time of day with a fellow traveler	<u>rather than</u>	read a book OR study the buildings and their kind of construction
as a member of a club, might take on the job of being public relations chairman	<u>rather than</u>	be available as recording secretary OR volunteer to be exhibits arranger
in a job, might prefer interviewing people	<u>rather than</u>	checking answers on questionnaires OR demonstrating a new gadget to show how it works
as a student, might prefer sharing homework with a fellow student	<u>rather than</u>	working out formulas alone OR experimenting with chemistry set

as a member of an amateur archaeology group, might prefer to teach a class about Indian relics	rather than	write about Indian relics OR dig up Indian relics and restore them
as a student, might prefer to spend time with a classmate, listening to her problems and helping her think them through	rather than	proofreading her theme for her and offering criticisms on its style OR giving her a home permanent and setting her hair
as an antique enthusiast, might prefer to lecture about antiques to an interested group	rather than	locate antiques, mend, and refinish them OR carry on a correspondence with another antique enthusiast
for a club, might wish to be program chairman, lining up events and speakers for the season ahead	rather than	serve as club historian, researching its past records to compile a history of its accomplishments OR prepare the hors d'oeuvres and fancy aspics for the club annual banquet

The THINGS orientation of a person relates to his capacity for, and inclination towards, roles in which he is dealing with things. In such roles he is reasoning and making judgments on the basis of his neuromuscular reactions arising from his direct contact with things - seeing them, hearing them, or touching them, or obtaining awareness of them through senses of gravity, temperature, balance, or other sensory capacity. He possesses an intuition of the properties of physical objects and forces which is not dependent upon symbolic skills. In such roles, mental set and bodily set of muscles, senses, etc., are directed towards observing and reacting to things.

The person who is strongly oriented to <u>things</u> in preference to <u>data</u> or <u>people</u>

when waiting for a bus, observe different makes of cars and details of nearby building construction	<u>rather than</u>	read a book, paper, or magazine OR strike up a conversation with a stranger and learn where he is going and what he thinks of the world situation
as a member of an astronomy club, might usually be seen at the workshop grinding telescope lenses and machining mountings	<u>rather than</u>	in the club office editing the monthly newsletter OR out organizing a social outing for club members
when settling down to read the Sunday newspaper might prefer to pour over the "do-it-yourself" page	<u>rather than</u>	thoughtfully read the book review section OR linger carefully over the accounts of events and the photographs in the society section
as a spare-time activity, get a kick out of building a model rocket	<u>rather than</u>	taking a group of small boys on a picnic OR playing chess

enjoy taking an evening course in shop practice or hand crafts	rather than	a language course OR one in personality development
in connection with giving a party, be apt to bake and decorate the cakes	rather than	tell fortunes by reading palms OR plan games to be played, writing up instructions
on a free Saturday afternoon, prefer to tinker with engines and motors	rather than	work crossword puzzles OR practice with a group which is putting on a "skit" for a holiday social
as a chore for the club, might prefer to bundle the newsletters and take to the post office	rather than	check addresses to see if they are readable OR assist the membership chairman by passing out leaflets

Section II. Rating Scales for DPT
Level Potential

RATING SCALE FOR DATA

0 SYNTHESIZING

Estimated potential to work creatively with data, to do original work in an occupational field. Such persons can function under conditions where the rules and limits are not laid down; are capable of relating many facets of a situation or circumstance and of thinking in independent, individual fresh ways that may result in inventions, designs, new methods and policies, explanations of phenomena which have not been apparent before, or artistic conceptions without precedent.

As

the DEVELOPMENTAL ENGINEER designing a new rocket engine

the RESEARCH PHYSICIAN formulating a new theory of cancer

the MUSICIAN composing a symphony

1 COORDINATING

Estimated potential to deal with diverse facets of circumstances and conditions which are complex and many sided. Originality is not so much a requirement of these people as a wide span of awareness and ability to keep track of, and under control with appropriate action taken, a wide array of facts.

As

the PRODUCTION MANAGER keeping in touch with every department in a factory to see that all processes are maintained in proper relation with each other

the NEWSPAPER PUBLISHER attending conferences, conferring with staff, consulting with public figures, taking part in civic activities, as part of an organized plan to disseminate the ideas which express the company's policies and point of view

the AIRPORT-CONTROL OPERATOR coordinating a sky full of planes coming in from all directions, working at a very high tempo, keeping many details in mind at once, giving instructions and listening to incoming messages simultaneously

2 ANALYZING

Estimated potential to work analytically with data within a framework of premises which are laid down. These people function best in situations in which the rules and limits are known, but in this context they are capable of a high order of logical thinking and the application of a complex body of organized knowledge.

As

the MICROBIOLOGY TECHNOLOGIST on the basis of reactions of bacteria under study, measuring, dissolving, and mixing ingredients to prepare a test which investigates their reproduction rate

the AGRICULTURAL TEACHER organizing facts to prepare a course outline on insecticide control

the COSMETOLOGIST applying the formulas of permanent wave solutions according to the characteristics of a particular kind of hair

3 COMPILING

Estimated potential to gather and put together data in an orderly manner. These people work best in situations where they take facts as they are, without necessity for making analytical judgments or questioning the "why" of the facts.

As

the BOOKKEEPER classifying all financial transactions of a firm into books of account and summarizing in a trial balance

the OFFICE NURSE securing information from patient in terms of case history needs as stipulated by physician's instructions

4 COMPUTING

Estimated potential to perform work which involves computing and recording numerical data. These people do well in jobs in which the main activity is computing but often their facility with numbers is applied in other situations in which computing is only part of the activity.

As

the FOOD CHECKER in a cafeteria food line

the BILLING CLERK figuring interest and discount rates

the LOG SCALER using fractions to compute number of board feet in logs

the UPHOLSTERY ESTIMATOR calculating quantities of material needed and making allowances for waste

5 COPYING

Estimated potential to copy data from one record to another, by posting, transcribing, and the like. These people do not require the ability to appraise or order data, but only the capacity to copy it correctly and follow a procedure or format in so doing.

As

the TYPIST typing plain copy or entering data on forms

the METER READER recording meter box dials indicating amount of electric current consumed

6 COMPARING

Estimated potential to make gross discriminations of very manifest kinds of data, as in comparing an article to standard, e.g., whether it is too large or too small; whether dates are stamped; tickets are readable; envelopes sealed; if articles in a lot all bear the same label or number; and similar undemanding tasks.

RATING SCALE FOR PEOPLE

0 MENTORING

Estimated potential to work with the individual in terms of his total personality and according to organized standards of professional principles. Such persons are oriented towards others from the standpoint of helping them solve their problems for their benefit and are strongly motivated to work with the problems of others. They are gifted in their preceptiveness of people and their ability to assume empathic roles.

As

the PSYCHIATRIST in his sensitivity to the needs and fears of those whom he treats, so that he guides a course of therapy in directions which will aid his patient to achieve insight

the CLERGYMAN giving personal guidance to bereaved persons in need of comforting

the COUNSELOR applying an understanding of the individual in his goal to assist persons in their personality growth

1 NEGOTIATING

Estimated potential to deal with people essentially in a mediating (communication exchange) role which results in joint agreements and understandings, on the basis of which programs, policies, and courses of action are worked out. Such persons possess a high order of astuteness in assessing human nature and spotting key facts in complicated human affairs. They exhibit leadership and a flair for managing human situations to achieve an end. They are not basically concerned with the total adjustment of the individual in the more clinical sense of MENTORING.

As

the LABOR-RELATIONS SPECIALIST conferring with department heads, labor representatives, and workers to resolve grievances and determine disciplinary actions

the POLICE COMMISSIONER conferring with heads of other city departments in the joint formulation of policies and programs

the FIELD CONTRACT MAN obtaining contracts from farmers to supply a product to a manufacturer, working out with them the various clauses of the agreements

2 INSTRUCTING

Estimated potential to assume roles which involve the teaching and instructing of others. These people are effective in oral presentation, in conveying and stimulating ideas, and in making the value judgments necessary to adapt teaching methods according to the requirements resulting from individual differences among people.

As

the SCIENCE TEACHER communicating and arousing interest in subject matter

the KINDERGARTEN TEACHER aiding in developing children by leading them in games

the COUNTY AGRICULTURAL AGENT instructing in improved methods of agriculture through lectures, practical demonstrations, and personal conferences

3 SUPERVISING

Estimated potential to be effective in assigning work duties to people and in evaluating their performance. These people have a liking for responsibility, good judgment in assessing and utilizing the capacities and performance of people, and skills in winning their cooperation.

As

the FOREMAN of a construction gang, showing a worker how to use a particular type of tool

the CHIEF CLERK in a typing pool helping an employee with a vision difficulty by improving the lighting

the WEAVE-ROOM FOREMAN separating an employee for excessive absenteeism

4 DIVERTING

Estimated potential for performing before an audience. These are people with a talent which enables them to render or enact a piece of music or dramatic role; give a public exhibit; or engage in some other performance.

As

the MUSICAL CONDUCTOR spurred in the quality of his performance by his sudden insights from his audience's reactions

the COMEDIAN swaying his audience with showmanship techniques

the BASEBALL STAR playing to the grandstand but keeping his pitching in top form

5 PERSUADING

Estimated potential for roles which involve persuading others to a point of view. These people usually present a pleasing personal appearance and exhibit ability to talk convincingly about a product or service - skill in "telling;" a natural, outgoing friendliness; good judgment in evaluating people's reactions: in summation, talent for inducing others to their point of view.

As

the HAT SALESPERSON carefully evaluating the hat and personality of customer as a guide to the sales "pitch" to take

the SALES ENGINEER calling on firms to convince them of the superiority of his company's line of machinery

the BARKER exhorting passing public to attend an entertainment or buy a product

6 SPEAKING-SIGNALLING

Estimated potential for working with people in situations requiring no more than pleasantness and politeness and the capacity to regulate personal feelings in dealing with others. These people need only to be able to relate to other people on a superficial basis to the extent that they may become a harmonious part of an organized work activity.

As

the SWITCHBOARD OPERATOR conversing courteously with persons placing calls

the GAS STATION ATTENDANT pleasantly saying "thank you" to customers he has served

the DENTAL HYGIENIST politely responding to patient's questions about condition of teeth, amount of fee, etc.

the DIRECTOR OF RESEARCH advising the MOTION PICTURE PRODUCER on the details of historic events, clearly and concisely filling him in with the information needed for authentic planning

7 SERVING

Estimated potential for work which involves adapting to the personalities of others and devoting attention to them. Such people adjust to roles in which they take direct orders, and devote themselves to pleasing others rather than themselves.
Note: The capacity to function in a serving role is frequently a concomitant of high data or things roles when such roles are in support of a higher level worker.

As

the WAITER solicitious that the service is right

the HOUSEBOY cleaning house exactly as employer stipulates, taking many direct orders to "do this" or "do that"

the NURSE, OPERATING ROOM disciplined to maintain unwavering attention to SURGEON as he operates, handing him instruments, sponges, and other equipment as needed

RATING SCALE FOR THINGS (MACHINE)

0 SETTING UP

Estimated potential to work with things in situations requiring that concurrent muscular, sensory, and attention responses be precise and discriminating within very narrow limits in relation to the functioning of machines. These people have a bent for mechanics, catch on easily to the workings of machinery, and are able to reason about the functional nature of machines in order to repair them, alter their performance, rig and install them.

As

the MACHINERY ERECTOR visualizing the interaction of moving parts as he fits machine sections together

the MACHINIST altering tools, jigs, and fixtures to prepare a lathe to make a particular metal part, requiring a knowledge of the idiosyncrasy of material as a basis for judging machine setup

the OPTICAL MISSILE TRACKING TECHNICIAN setting up instrumentation devices to track missiles on down-range flights, adjusting procedures and equipment as required by current conditions

2 OPERATING-CONTROLLING

Estimated potential to work with things in situations requiring of the worker alertness and various forms of coordinated activity combined with an understanding of how machines operate. These people adapt to being in a mechanized environment and have the ability to adjust responses to pace set by machine. They are good in judging distance, speed, and motion generally; prompt in recognizing signs of mechanical disorder; and capable of vigilant attention to such things as dials and other indicators of machine function and of acting promptly to start or stop the operation of a machine.

As

the KNITTING MACHINE OPERATOR spreading attention over a large machine containing 30 units and over 100,000 working parts to keep a close check on signs of malfunction

the FOURDRINIER-MACHINE TENDER controlling a paper making process beginning with pulp and ending with formed paper, performing in proper order a complex series of machine adjustments to properly subject the pulp to the necessary processes as it evolves into paper

the CONSOLE OPERATOR controlling an electronic digital computer, observing control panel for error lights, verification printouts, etc.

3 DRIVING-OPERATING

Estimated potential to work with <u>things</u> in situations requiring of the worker alertness and various forms of coordinated bodily activity combined with adaptability to working with machines that must be guided or steered in a course. These people have the ability and willingness to assume responsibility for guiding moving machines which can cause substantial injury, loss of life, and material loss if out of control. This potential implies the possession of good bodily coordinations and the spatial ability to anticipate the events resulting from the convergence of moving objects in space.

As

the BUS DRIVER operating an interurban bus on a heavily traveled highway, responding steadily to sensory cues

the HOT METAL CRANE OPERATOR manipulating a hydraulic mechanism to dump molten metal from ladle to converter

the MISSILE-CONTROL PILOT directing course of pilotless jet planes, using knowledge of flight characteristics of aircraft to effect takeoff and maneuvers, such as climbing, banking, turning, and landing

5 TENDING

Estimated potential for working in a mechanized environment, involving an ability to pay close visual, aural, or other type of attention to the functioning of machines and equipment and the quality and quantity of product to detect deviations from standard. These people function well in situations requiring sensitivity to visual, auditory, tactile, and other stimuli and the capacity to give close and sustained attention to routine situations.

As

the CLOTH WINDER giving continuous close observation to detect any slight signs of malfunction in the machine operation as manifested by irregularity in the bolting of the cloth

the FERMENTATION OPERATOR tending tanks in which antibiotics are being processed, watching temperature, indicators to ascertain that prescribed temperature of the fermentation mixture remains constant

6 FEEDING-OFFBEARING

Estimated potential for working in a mechanized environment, involving the serving of equipment which may be automatic or operated by another worker. These people have the capacity for rapid and continuous muscular action and can adjust well to being paced by machines or other workers.

As

the OFFBEARER removing articles from a conveyor

the MACHINE FEEDER placing stock in hoppers of automatic fabricating machines

RATING SCALE FOR THINGS (NONMACHINE)

1 PRECISION WORKING

Estimated potential to work with things in situations requiring that concurrent muscular, sensory, and attention responses be precise and discriminating within very narrow limits. These people are capable of acquiring the maximum discipline of bodily integrations and making sophisticated judgments which are cued on a continuing step by step basis from neuro-muscular reactions arising from direct contact with things.

As

the SURGEON by the "feel" of scalpel on tissue that dangerous limits are not being exceeded in a delicate brain operation

the SCULPTOR by its behavior under the chisel, if a piece of stone is suitable material from which to carve a human head

the SURF RIDER's precision control of timing, balance, and place in formation, his mastery of surfboard delicately dependent upon perfect coordination of muscles with the ever changing pattern of wave forces

the RUG REPAIRMAN hand reweaving damaged areas of costly oriental rug, exactly duplicating original design, his fingers acutely sensitive to yarn textures, his eyes and hands working in perfect unison

the PLUMBER soldering edges and joints to make a connection absolutely watertight, continually judging next step in operation on the basis of sensory cues

the RIGGER counterbalancing gear, guided by a finely developed sense of weights

4 MANIPULATING

Estimated potential to work with things in situations requiring alertness and various forms of coordinated activity involving hands, eyes, feet, and skeletal muscles in some combination. These people are capable of acquiring extensive patterns of well standardized bodily integrations and making evaluations on the basis of unambiguous cues arising from their direct contact with things.

As

the FISHERMAN stretching his drag net across a river requiring widespread bodily coordinations

the POULTRY KILLER severing chicken heads and windpipes with knife to kill them rapidly

the ROSE MAKER making artificial roses, arranging the petals and center portions in a lifelike arrangement and dextrously tying up petals, buds, and leaves to form a spray

the LADLE MAN, carefully tilting ladle to permit molten metal to pour out into ingot mold

7 HANDLING

Estimated potential to work with things in situations which require only the most gross disciplining of muscular, sensory, and/or attention responses to achieve the low amounts of precision and discrimination involved. Use of large skeletal muscles and superior strength of back may or may not be involved. Only quite limited techniques or patterns of bodily integrations are required. Note: Limited handling potential in no way implies low potential in relation to data and people.

As

Loading trucks
Turning chickens on a conveyor belt
Ripping seams
Turning diamonds under a magnifying glass
Passing out handbills
Picking berries
Shoveling snow
Dusting furniture
Removing brood frames from bee hives

PART II

THE FIELD OF WORK GUIDES

THE FIELD OF WORK GUIDES

The Field of Work Guides present a career development approach to occupational information. However, they are keyed to the Dictionary of Occupational Titles on a code basis. In this way exploration can proceed to specific occupations.

Inasmuch as a wealth of occupational information exists which emphasizes the economic and technical phases of work, this HANDBOOK elaborates on aspects of occupational life not found in the pages of traditional occupational literature. It takes a stab at achieving what Henry Borow calls "a more adequate image" of occupations: their colors and forms; the excitements, tensions, and disciplines that go with them. The materials might be thought of as a treatment of ideas, rather than the facts, of occupational information. The ideas, of course, have the facts as their foundation. An attempt is made to put images and facts together to make images relevant and lend meaning to the facts in order to build up a view of the world of work to which a counselee can relate to in a personal way.

Counseling as it is presently conceived to deal with the whole individual is a discipline so broad that counselors must incorporate events of the most varied nature to aid the counselee in an experience of self-discovery in which not only capacities are explored, but feelings about the world, including work, and the meaning of such feelings.

The counselee must be able to apprehend occupations as activities that are to be lived out, provide much of his life's drama, adventure, sociability, and self-expression, and give him opportunity to achieve society's accolades. He must be able to weigh what occupations may exact from him because of tension, monotony, danger, anonymity, repression of self, doom to a cog-in-the-wheel existence. He must think through the gains or losses of dreams, ambitions, and freedoms which go with a particular career decision. These kinds of insights do not come through the neutral data of research, but must draw upon the insights of the humanities and the arts whose sphere it is to communicate such values. The flow of communication necessary to achieve these insights takes place through the affective uses of language.

RESEARCH SOURCES

Because of this point of view, the researches upon which this HANDBOOK is based have included not only the customary technical and psychological sources, but also texts and journals reporting on various other aspects of occupations. Use has been made of what writers in occupations have had to say about their work, themselves as workers, or what their fellow workers are like. The HANDBOOK has drawn upon a wide array of literary sources that have had something to say about people and about occupational life. It has made extensive use of the not inconsiderable literature of occupational sociology, a large area of empirical research rarely found in counselors' occupational libraries. A primary source of sociological occupational information made use of is the "Abstracts of Sociological Literature on Occupations," prepared by the Research Department, Vocational Guidance and Rehabilitation Services, Cleveland, Ohio, financed through the research program of the Office of Manpower, Automation and Training, United States Department of Labor.

OCCUPATIONAL "MODELS"

The counselor seeks a complete picture of the individual, not one consisting of a few segmented elements. As a corollary, the counselor cannot assist the whole individual intelligently in vocational planning with a view of occupations which is limited and fragmentary. As there is wealth of occupational information geared to the economic and trait models, this material gives priority to other "models" of occupational information and occupational life.

The "model" of occupational sociology, for instance, usually relates to the more subtle characteristics of jobs, such as cultural pressures, role identities and role conflicts, occupational prestige, organizational and associational aspects of occupations, and the effect upon the person of rigid structuring of role in a bureaucracy, etc. Occupational information of the sociological type is often provisional and suggestive, based on participant observer techniques. It frequently depends on anecdotal data rather than that secured by representative sample or cross-section. However, it gives insights into many kinds of human problem situations which occur in occupations that are not even hinted at in customary occupational information resources.

Sociological description gives a rather different order of information from that obtained by the rigorous methodology of experimental psychology. The psychologist sees work as a set of tasks requiring of the individual attributes such as numerical ability, strength, emotional stability, high school graduation. He thinks of ways to measure the extent to which a person possesses the attributes and how validly he can predict the person's behavior on the basis of the measures.

Adding the sociological dimension greatly expands the concept of the occupation. However, the sociological dimension alone only goes part way towards achieving a total image of the occupation. Indeed the sociological image of the occupation is often painfully ascetic and holds only a thin relationship to the phenomena of experience which is the "reality" of the counselee. It is "his" reality, not the scientific reality, which will be the basis for the counselee's feelings, insights, and motivations.

The phenomenological or literary "model" of occupational information can contribute most to that sense of reality which the counselee needs. This model communicates in terms of the "commonsense" knowledge which constitutes the reality of everyday life.

Occupational life as a complete life experience has been probed by novelists from Upton Sinclair to Harvey Swadoes. The literary model of occupational information has much to commend itself to the counselor who works with the counselee in terms of his feelings and motivations.

The following depicts an occupation viewed consecutively through the psychological, sociological, and literary or phenomenological models. The occupation is

MUSIC COMPOSER

1. The psychological model. Seashore's factors which underlie musicality are Pitch, Loudness, Timbre, Rhythm, and Tonal Memory. Extensive studies have established the reliability and validity of the Seashore factors. The tests based on Seashore's factors have been considered to have value in estimating the trainability of persons and are held to be useful in guidance and employment centers for this purpose.

2. The sociological model. The sociologist views the composer as the outcome of selective forces in society which direct people into particular roles. He ventures the suggestion that such selective processes operate before the individual makes the conscious choice and successful effort to achieve a role. In his view, learning theory -- rewarding one type of response -- accounts for the development of the drive to compose. The supposedly hereditary trait of musicality is constantly reinforced by the explicit valuation of musicality in the person's family.

3. The phenomenological or literary model. This is given by Aaron Copeland in his self-report on his development as a music composer. He writes of the place of the composer in industrial America and states that he grew up ignorant of serious music, sees himself possessing an instinctual drive towards the world of sound. He describes how his encounter with serious music in his adolescence was like "discovering Paris or Rome if you had never heard of their existence." It was "uncovering riches of which his neighbors were unaware, a plane of reality having no parallel in his daily life." He writes of his decision to become a composer at the age of fifteen and how he kept it secret for a very long time, not daring to confess it. Music he sees as an instrument to replicate experience. "What do I do when I compose?" he asks. "I put down a reflection of emotional states, feelings, perceptions, imaginings, intuitions."

These three models reflect some of the various ways in which occupations may be viewed. This document has drawn upon information as generated by all three "models" in an attempt to bring occupations alive to both the intellect and the imagination.

PROFESSIONAL, TECHNICAL, AND MANAGERIAL

The designation "Professional, Technical, and Managerial" refers to a very broad area of human activity which includes the arts, humanities, and diverse fields of organized knowledge.

Occupations associated with this sphere of work may be closely related to those in other fields. Many managerial occupations are the top levels in career fields which fall in clerical, industrial, public contact, outdoor, or service work. Some technician occupations and trades and crafts occupations are almost identical in knowledges and abilities required.

The term "professional" has a variety of meanings which are not interchangeable. In many of the human service professions (and to a lesser extent in many areas of science) particularly those in an institutional setting, e.g., physicians, social workers, teachers, etc., the work is structured in a hierarchical fashion with professional and support personnel such as technicians and subprofessionals occupying a ladder, each step of which is specifically defined and delimited with the status associated with each level established and explicit. Professional status is achieved on the basis of a definite prescribed program of preparation, and entry into the occupation is formal and official, as are the steps of progression up the hierarchical ladder. In this occupational structure, the exercise of creative judgment is a function usually reserved for the top occupations in a hierarchy on the assumption that mastery of a field of knowledge is a necessary prerequisite to original thinking in it.

However, to say of a writer that he is a "professional," connotes something entirely different. The implication is that he is a master of his craft as contrasted with a novice or bungler.

If the term "professional" is applied in sports and some of the performing arts, it is to distinguish professional from amateur status, hence for renumeration. It does not imply any difference in expertness and skill. In some sciences (which traditionally have attracted large numbers of people into their study purely for reasons of "love" or "taste," e.g., ornithology, and in the past to an extent, astronomy), the distinction between professional and amateur has been loosely structured, with some of the most fruitful research and basic theory being the work of the amateurs.

Taken as a whole, the occupations associated with professional, technical, and managerial work are the ones which are the most demanding in terms of complexes of aptitudes and special talents on the part of workers. Most of the occupations require specialized training, frequently on a graduate level. Some of the occupations involve the practitioner in a professional relationship with a client; such relationships are disciplined by organized standards of ethics, and practice is restricted to persons with full professional preparation. Many of the occupations involve activities governed by the most rigorous disciplines, in which bodies of knowledge are codified into complex notation and symbol systems, e.g., mathematics, music. The ability to innovate and produce new ideas in addition to the mastery of an extensive body of knowledge is required in many of the occupations.

There is demand and opportunity in this area for the intelligent and for those who are not only intelligent but creative. Investigations into the nature of intelligence and creativity have produced a voluminous literature to depict how the thinking processes involved in acquiring basic knowledge and those in producing new ideas differ. Intelligence involves the capacity to acquire and apply a body of knowledge. Creativity goes beyond the mastery of established knowledge and concerns itself with viewing reality in fresh ways.

Creativity as a human characteristic has been intensively researched by various scientific disciplines on the basis of behavioral studies and by humanistic disciplines on the basis of the self reports of the producers of creative works. Despite intensive study, creativity exemplifies a mode of human behavior for which science has not been able to deduce an explicit, quantitative account of the dimensions of relevance.

Unlike rational analysis and conscious calculation, creativity is reported not to be easily set into motion at will. In the testimony of many who create, it comes from "thinking aside," or "they let it come to them." Creativity as a process of purely conscious calculation seems almost never to occur; it is often viewed scientifically as drawing heavily upon subconscious and preconscious levels, or perhaps on a level of concentration which draws upon all levels of consciousness in unison.

On the basis of the many profiles of the creative personality drawn by scientists and artists, the following suggestive pattern of characteristics emerges. Creative people are freer of inhibitions against the untried; have the courage to fly in the face of the established. They perform better when they have autonomy and independence, less well when too restricted by conformity and

structure. They tend to seek out more and more difficult problems to solve and constantly establish difficult goals for themselves. They are more at home with complexity and disorder than ordinary people because it gives them the opportunity to synthesize their own order out of chaos. They have unusual capacity to retain life experiences and to recall these, more self-awareness, wider-ranging interests. They are in closer contact with fancy and reverie, think spontaneously in mataphor. They tend to prefer perceiving to judging, seeking not so much to control and regulate experience, as to understand its deeper meanings and possibilities. They are likely to be dominated by their work so that they often become in effect servants of their work. They often say they do not choose their themes but that their themes choose them. They tend to see their works as having lives of their own (independent of themselves as the creators or producers) towards which they feel obligation, duty, and respect.

With variations, this pattern of characteristics seems to characterize the creative individual in all areas. However, within the pace-setting endeavors of man -- the arts and organized knowledge -- to which creative people usually aspire, there are many work cultures. Although these occupational cultures may seem foreign, dull, and incomprehensible to one another, to the creative practitioners in them, their callings are indeed "adventures of the mind." Although not always apparent to the outsider on the basis of a factual job description, it is often vividly expressed when creative representatives of the various work cultures speak for themselves.

When James R. Killiam, Jr., the first scientific adviser to the President of the United States, wanted to define science, he quoted Warren Weaver: "Science is . . . the response, at once poetic and analytical, of man's creative mind to the challenge of the mystery of matter and life." When Marquis Eaton, Vice President of the American Institute of Accountants, answered the question, "What is accounting," he explained it in these words: "(Accounting) is the sublime equation which explains the basic elements of commerce so that man may manage, understand, and utilize them for their own good. . . without which modern forms of government and systems of human rights that flow from them could not have taken the shapes that we know."

In PUBLIC SERVICE, ORGANIZED KNOWLEDGE is applied in serving others to promote their physical, social, economic, mental, or spiritual well-being, and some are likewise concerned with the social organization and well-ordered progress of the community. Many are set up according to regulations (by professional societies and/or government) which define and delimit the work done. In all the jobs the primary orientation is in terms of dealing directly with people, and professional relationships with others are always governed by organized standards of competence and ethics.

In THE SCIENCES, the emphasis is upon the facts, principles, and theories that express social and natural phenomena and upon laboratory and field experiment and observation either to expand this knowledge or to solve immediate, practical problems by the use of the knowledge. The primary orientation is from the viewpoint of applying scientific method to explain reality.

In ENGINEERING AND RELATED, the emphasis is upon the creation of technology and its application to the practical needs of the human community. Primary orientation is in terms of the art and science by which materials and energy are made useful to man.

In BUSINESS RELATIONS, the emphasis is upon the application of ORGANIZED KNOWLEDGE to helping business understand, predict, and influence the behavior of the marketplace, i.e., the economic milieu. Workers are oriented towards economic and business accomplishment.

In MANAGERIAL, ORGANIZED KNOWLEDGE about the particular activity directed, as well as skill in coordinating the efforts of workers and equipment, is needed. Although managerial competency as such is becoming more and more the subject of specialized training, it is still true that by and large workers grow into these levels on the basis of work experience and indications of leadership capacities which develop on the job.

The temperament roles and interest involvements which are most frequent are listed below. These exist in varying combinations. Other temperaments and interest factors are associated with activities in ORGANIZED KNOWLEDGE but occur less frequently.

Frequent temperament roles: Objective in the use of closely reasoned logic as a basis for making decisions. Valuative in the many situations in which alternative choices must be made, thus requiring the exercise of value judgments. Dominance in self-direction and/or direction of others. Rigorous in exacting scientific activities.

Variable temperament roles: Dealing with People in both interpersonal and group relationships. Versatile in wide range of ideas and situations which engage the attention of workers. Influencing in those jobs which involve persuading others to a point of view. Working under specific instructions for many supporting jobs in which complicated instructions must be followed exactly.

Frequent interest involvements: Abstract, Creative in the use of imagination to see new relationships among phenomena which had previously been thought to be unlike. Prestige in that the occupations frequently afford unusual opportunity for achievement and recognition.

Variable interest involvements: Scientific in the search for new knowledge and understanding of the underlying facts of nature. Social Welfare in an ideal of service and sincere interest in all kinds and classes of people. People and Communication of Ideas in the need to understand people and to teach or otherwise influence them in their opinions, attitudes, or conduct. Business Contact in many occupations connected with the business community, which require people who are expert in generating good will. Things and Objects for those jobs in which the cues for the worker's judgment stem in large part from the behavior of things. Working with Machines, Processes, and Techniques, especially for technicians engaged in the use of instruments or in monitoring processes.

BASIC VOCATIONAL DIRECTION

PUBLIC SERVICE

Education
Library, Archival and Museum
Judicial Service and Legal
Religion and Theology
Guidance and Social Work
Home Economics and Dietetics
Protecting, Public Service
Physicians and Related
Nursing
Medical Technicians and Assistants
Pharmacy
Mortician Service

PUBLIC SERVICE (GENERAL FIELD DESCRIPTION)

The field of PUBLIC SERVICE contains those professional people who exist in the greatest numbers and with whom everyone is most familiar -- our teachers, clergymen, doctors, nurses, policemen, morticians, judges, lawyers, counselors, social workers. The common aspect which relates the work of these people is that it involves professional relationships with others that are governed by organized standards of competence and ethics.

These workers apply organized knowledge in serving others to promote their physical, spiritual, mental, economic, or social well-being and some are likewise concerned with planning, organizing, and enforcing the system of community living. Many of the jobs are set up according to regulations (by professional societies and/or government) which define and delimit the work done. Some types of the jobs are commonly associated with governmental or private institutions, e.g., librarians, dietitians, teachers, clergymen, policemen. Others are more often (although a large minority are not) set up as "self-employed" endeavors serving a private clientele, notably pharmacists, morticians, doctors, lawyers, and certain counseling services.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Social studies are basic to all fields.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Although the approach to solving other people's problems may be as diverse as that of the lawyer and the doctor, there is a requirement throughout the public service field that workers have a core knowledge of human psychology and social processes. The jobs demand people who are interested in the "why" of human nature and who are skillful in spotting key facts in complicated human situations. They must often be able to evaluate human situations not only as isolated phenomena but also as related to a community problem, or perhaps to society broadly; in short to the world we live in. In some instances these workers are required to dominate, e.g., judges; in others, e.g., psychiatrists, they function essentially as catalysts in a process whereby an individual is led towards a goal of self-understanding and social adjustment. But whether they perform their roles by projecting their own personality; as for example, the trial lawyer; or play the listening and more effacing role of the guidance counselor; or assume responsibility for human life as the pharmacist; or quietly dedicate their interest to the varying educational, recreational, and inspirational requirements of people of all ages, as the librarian; their mental set and receptivity are closely attuned to the behavior and needs of others. The rewards of the people in these occpations are chiefly in terms of the satisfactions deriving from being a constructive force in the community, the opportunities afforded for creative relationships with others; and the feeling that their work is important. It is characteristic of the field of Public Service Work that the worker must be willing to give the service which his job requires of him, even under circumstances which may be inconvenient, distasteful, or even dangerous. Many of the jobs involve the worker in stress because of the difficult, often insoluable, human conflicts which he may be called upon to mediate. The work is often emotionally exhausting in its demands upon the worker's commitment of self to helping others with their problems.

RELATED LEISURE PURSUITS: Pursuits that show motivation to work with the problems of others. Participation in service and civic groups. Leadership in schools, clubs, or other community organization. Bent for learning, evidenced by broad background of knowledge.

ILLUSTRATIVE TEMPERAMENT ROLES: The capacity to <u>deal with people</u> is necessary to get along smoothly with clients, patients, colleagues, and the public. <u>Dominant</u> in taking responsibility for important decisions affecting other people's lives. <u>Self-controlled</u> to understand and control own behavior in the interests of the individual or group that is being served AND in being able to discipline own feelings when faced with criticism, distraught behavior in others; or other disquieting situations. <u>Valuative</u> in constant need to size up complicated human problems and to make value judgments. <u>Objective</u> in open-mindedness to all facts in appraising a situation. For some, <u>influencing</u> people in their opinions, attitudes, or conduct. For some, <u>versatility</u> to cope with shifting, many-sided circumstances.

ILLUSTRATIVE INTEREST INVOLVEMENTS: <u>Social Welfare</u>, i.e., <u>deal with people and language in social situations</u> in that orientation to others is from the viewpoint of helping them solve their problems to their benefit. <u>People and Communication of Ideas</u> in the dissemination of views which may be directly to individuals or groups, as to pupils in a classroom, or through various communication media to the population of a nation. <u>Prestige</u> in trusted position in community and opportunity to influence the values of society and promote human growth and achievement.

EDUCATION. Work, training, and leisure pursuits involving teaching or training others in formal or informal educational or training programs.

Explore DOT OGA: 09 Occupations in Education

Related Career Possibilities: 10 Occupations in Museum, Library, and Archival Science
05 Occupations in Social Sciences

Other occupations related to particular subject matter fields taught.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: The field of education includes a variety of special instructional situations, many of which take place in private organizations. Specialized kinds of instructing of various types may be taught by experts in the skill.

As a career field, however, the chief emphasis is upon two main areas, public education and higher education. Generally speaking, the field of public education is set up according to the following requirements: Elementary through junior high school teaching - bachelor's degree. Secondary school teaching - master's degree. Some temporary and substitute teachers, as well as teachers in some rural schools, may be employed without a college degree. All States require every teacher in the public schools to hold a certificate. Some States have the same requirement for teachers in private schools which students attend in lieu of public school attendance. Certificates may be only temporary for persons not meeting full requirements. The usual programs of preparation available for public school teaching are: (1) At a teacher's college with a four-year program concentrated on educational courses; (2) At a regular liberal arts college with a major in education; or (3) By a degree in a field other than education, in which case the required education credits can be made up in college summer sessions.

In the field of higher education, in most four-year institutions and in a few junior colleges, teachers progress through a system of ranks, from instructor to full professor. Experience helpful to entry may often be obtained in the form of a teaching assistantship. The requirements generally agreed upon for the various steps, but subject to considerable variation, are as follows: Instructor - master's degree. Assistant professor - doctorate or highest degree in teacher's field (exceptions are made for those with outstanding professional accomplishment). Associate professor (which may be a terminal rank) - doctorate or highest degree in teacher's field plus successful professional accomplishment in research and/or teaching. Full professor - doctorate or highest degree normally earned in teacher's field plus distinguished scholarly attainments in research and/or teaching. A teacher with very outstanding distinction in his field may retire as emeritus professor.

Community and junior colleges as a rule expect and require nothing beyond a master's degree. This is also true in many small colleges although employment opportunities are more favorable for those with a doctorate. Persons who are eminent as writers, explorers, etc., who do not have the academic credentials may be employed at colleges and universities as visiting professor, writer-in-residence, artist-in-residence, or in other special capacity.

Most schools of education will employ either the holder of the Ph.D. or the Doctor of Education. In a medical school, the Ph.D. is required for research professors, but the M.D. for clinical professors. There are currently offered some 150 different master's degrees and 68 different doctor's degrees, many of which are judged appropriate for work in specialized professional institutions. These include such degrees as M. Prof. Acc. (Master of Professional Accountancy), M.S.P.H. (Master of Science in Public Health), D. Comp. L. (Doctor of Comparative Law), D. Sc. Hyg. (Doctor of Science in Hygiene), and D.S.C. (Doctor of Social Science. Whereas the time periods for acquiring doctorates in professional areas such as medicine and law are well established, and theoretically the Ph.D. represents three to four years work beyond the bachelor's degree, surveys have shown that in practice graduate students have been found to spend considerably longer periods before finally acquiring the doctor's degree.

SPECIFIC RELATED COURSES: Adult Education, Child Psychology, Comparative Education, Counseling, Curriculum Construction, Debate, Developmental Psychology, Education, Educational Administration, Educational Measurements, Educational Psychology, Educational Sociology, Educational Tests, Educational and Vocational Choice, Elementary Education, Health Education, Mental Tests, Objective Tests, Pedagogy, Philosophy of Education, Physical Education, Programmed Learning, Psychology of Childhood and Adolescence, Public Speaking, Remedial Reading, Remedial Speech, Secondary Education, Teacher Training, Tests and Measurements, Visual Aids, Vocational Guidance, School Psychology.

RELATED LEISURE PURSUITS: Tryout as a teacher's assistant. Observing teachers, reading about teachers. Interest and achievement in social studies. Participation in service and civic organizations. Public speaking. Tutoring a fellow student, or teaching a special skill to a group. Success in athletic coaching, camp counseling, group outing organization, play or sports leadership, practice teaching, Sunday School teaching. Leadership in student organizations. Wide reading interests. Interest in scholarship.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Education is the most extensive continued activity of man. Of all the professions, teaching is the largest. Although various extensions of the teaching process have been introduced in the form of audiovisual resources, teaching machines, and programmed instruction, the classroom teacher remains the mainstay of the educational system.

The process of education is the subject of many definitions. Some have seen it primarily as the self-directing adjustment of the conscious individual to his environment through the progressive acquisition of his intellectual and social heritage. Jacques Barzun has called it the lifetime discipline of the individual by himself. Another point of view stresses education from the viewpoint of what the educator does and may see it as the process by the educator of effecting behavioral changes in specified groups of people in a planned and goal-directed manner. There seems to be agreement that the task of education includes fitting a person to his environment, spiritual, human, and material. This involves education in both cognitive and affective dimensions. There are many running battles in education, as, for example, the relative importance of the specialist's expertise versus the generalist's understanding. Once lower education was viewed chiefly as training in the three R's; currently any definition of it usually emphasizes its task of fitting the individual to his social environment. The primary goal of higher education is usually seen as introducing the individual to advanced and specialized areas of his culture, and ideally to instill in him the capacity to analyze and question the culture in which he finds himself. On all levels, many teachers teach and study all their lives without benefit of public recognition. The profession has built in and codified a rather elaborate system of ranks tied in to academic achievement which registers it so that all may see. All types of teaching require the following special knowledges and abilities: Educational methods; pedagogy; subject matter to be taught. Effectiveness in oral presentation. Understanding of psychologies of motivation and learning. Special methods of teaching particular subjects. Ability to adapt teaching methods to individual differences among pupils.

PUBLIC SCHOOL EDUCATION

PERTINENT INFORMATION (Special requirements, cultural and sociological data): On page one of his newspaper, the teacher may read Henry Adams quoted: "A teacher affects eternity; he can never tell where his influence ends." He may turn to page two and see headlines which ask "What's wrong with American teachers?" The teacher gets much written about; he is both lauded and reproached. The inspired teacher is held in the greatest esteem, yet when strains turn up in society, teachers are frequently blamed.

When teachers write about their anxieties and discontents, they tend to stress the lack of clear-cut, indisputable proof of effectiveness. The teacher has no dependable means of discerning the precise extent to which his efforts have helped students to learn. On the one hand he may receive great satisfaction from feeling that his teaching is producing a knowledgeable, productive, vital young person. Daily, however, he may be discouraged by the number of students under his tutelage whose achievements fall far short of his aspirations for them.

In the public schools the teacher's role will vary greatly. The slum school may be overcrowded with children who have been robbed of the last shred of dignity, confidence, and self-respect. The teacher may find behavior which is revolting to him. In the suburban school, he may deal with children who are successful, articulate, and confident. These situations may require of him adjustments of a completely different kind, yet he may need to be flexible and adjust to moving from one type of school population to the other.

The teacher tends to feel more secure if the students seem orderly and attentive. However, he may get involved in a school situation in which the students are not orderly. He may live in dread of insurrection; in such a situation the teacher requires the highest order of stability and inner resources not to become involved with negative feelings, such as contempt for truculent children and a feeling that they are unworthy of attention or incapable of learning. He must ward off feelings that sloth and recalcitrance are a personal affront to him. He may have to fight down his own reactions when in quiet desperation he asks the child the fifth or sixth time to do something without getting a response and try not to feel discouraged at a student's utmost indifference when he tries to assist him. He must never lose awareness that his classroom can become an arena of opposing forces rather than a laboratory of learning. If he once lets himself be undermined, his cause is lost. No matter what his difficulties, the teacher is expected to be dedicated and to feel rewarded by the intrinsic satisfaction of a life of service. To many teachers, this is not enough.

For teachers who find the teaching way of life proudly satisfying, however, and to whom nothing is more dramatic and exciting than seeing the young child or adolescent reach an understanding which he has not had before, the words of Henry Adams are very real and do express the lure of the teaching profession to many who would not consider another type of career.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (PUBLIC SCHOOL EDUCATION - ELEMENTARY)

PERTINENT INFORMATION (Special requirements, cultural and sociological data): These teachers are employed in all cities, towns, villages, and rural areas. They conduct a program of education for children below the junior high school level. In rural schools, teachers may teach all subjects. Larger schools may have specialists in art, music, physical education, etc. A kindergarten program provides children with experiences in play, music, artwork, stories, and poetry, and introduces them to science, numbers, language, and social studies. The elementary teacher teaches reading, arithmetic, spelling, music, art, literature, and social studies; helps children plan and conduct special activities; and functions in various ways to help children in personality development. The teacher must keep records of personality, attendance, and achievement of individual pupils; grade papers, plan lessons, attend school and community events, and confer with parents. Teachers of children need natural curiosity, a strong sense of fair play, and a desire to be useful to children of all levels of society. Their influence in setting the standards and tastes which children acquire can hardly be overestimated. They need to be well grounded in the developmental characteristics of children--their stages of mental and physical development.

RELATED LEISURE PURSUITS: Pursuits which show deep interest in working with young children. Baby sitting. Teaching children simple games and songs. Helping children with their coloring, finger painting, clay modeling. Taking children on walks, pointing out nature facts to them. Reading stories and poems to children. Leading them in games.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious to enjoy working with children and to relate effectively when holding conferences with parents and serving in various community activities. Versatile in all kinds of responsibilities which range from introducing children to the mystery and wonder of poetry and logic of science to monitoring the lavatories, taking care of lunchroom, and filling out attendance cards. Dominant to maintain effective classroom organization and control, especially in upper elementary grades. Valuative in evaluating pupil attitude and personality problems on the basis of observations. Objective in evaluating pupil performance on the basis of standardized tests AND in being open minded, resisting preconceived notions, prejudices, and set ideas. Influencing in that serves as a model for the young and has the task of instilling a sense of responsibility, imparting a desire for knowledge, and encouraging the character qualities in the young which will provide the grounds for successful living. Self-controlled when authority is threatened by children who are spoiled and difficult to control or by those who are rowdy, untrained, and without respect for others.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas to instill in children such ideas as kindness to animals, fair play, sharing, helping each other, and to generate their interest in the basic fields of subject matter on which their later success in life depends; e.g., mathematics and language. Social Welfare in adherence to goals of guiding children to be decent, trustworthy people, capable of assuming individual responsibility. Abstract, Creative as the TEACHER, KINDERGARTEN who encourages children in singing, dancing, and rhythmic activities to promote self-expression and appreciation of esthetic experience OR the TEACHER, MENTALLY RETARDED devising instructional methods to stimulate interests and develop manual skills of pupils. Prestige in dignity of place in community life and sense of satisfaction in being a factor in child development, which may be rewarding to the teacher all his life as he sees his pupils grow up and do well in life.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (PUBLIC SCHOOL EDUCATION - SECONDARY)

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Secondary school teachers usually specialize in a particular subject. They usually teach several classes each day, chiefly by lecturing, directing discussions, and giving examinations in the subject. They may teach only their main subject or teach in related subjects as well. The most frequent combinations are English and history or other social science subject; mathematics and general science; chemistry and biology. Teachers in some fields, such as home economics, agriculture, commercial subjects, driver education, music, physical education, art, and industrial arts less frequently conduct classes in other subjects. Besides giving classroom instruction, secondary school teachers develop and plan teaching materials, develop and correct tests, keep records, make out reports, consult with parents, and supervise study halls. They may supervise student club and social affairs and promote a variety of extracurricular activities such as arranging athletic contests, staging dramatic performances, and gala special events. They are expected to maintain good relationships with parents, the community, and fellow teachers. They need enthusiasm for the subjects they teach and appreciation and understanding of adolescents. They are expected to maintain high standards of personal conduct and their civic, social, and recreational activities may be influenced, and sometimes restricted, by the customs and attitudes of their community. They require a good ability to communicate ideas and to grasp those of others in order to help students think through problems.

RELATED LEISURE PURSUITS: Success in athletic coaching, camp counseling, group outing organizing, play or sports leadership, practice teaching, Sunday School teaching, calisthentics instructing. Leadership in student organizations. Debating, public speaking, leading group discussions. Varied reading interests and bent for scholarship.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious to relate effectively to students, fellow teachers, parents, and representatives of community organizations. Valuative when the TEACHER takes into account his own classroom experiences with students and adapts his teaching approaches to their individualities and objective in evaluating students' abilities according to evidence, without being influenced by extraneous factors such as social position of student or his unattractive personality traits. Influencing to motivate students towards a constructive life. In early high school years, the adolescent's direction is usually set which determines whether he will turn out to be a hoodlum or a proud man. Dominant to maintain orderly classes and to conduct community relationships in a manner to inspire confidence. Self-controlled to overcome anxiety and defensive feelings when faced with negative student attitudes such as hostility, resentment, lack of respect, refusal to pursue assigned tasks, and general indifference to learning.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas in classroom and individual instruction. This is important not only to communicate and arouse interest in subject matter, but also in conveying and stimulating ideas and in guiding the student's intellectual development and cultural awareness. Social Welfare interest in helping the individual develop his fullest capacities both for his own and the common welfare. The teacher can look at the slum boy he taught who made good and perhaps think, "because of me he went to college." Abstract, Creative in diagnosing motivation, learning, or other problems and planning solutions. Prestige in that the secondary school teacher may be a leading citizen in his community, widely respected and regarded with a great deal of esteem by his students.

HIGHER EDUCATION

PERTINENT INFORMATION (Special requirements, cultural and sociological data): College and university teaching involves a distinct style of life. People of intellect and creativity live and work together in a mutually interacting atmosphere. The intellectual excitement in a college community may extend from discussions of metaphysics and philosophy to quantum mechanics and theories of abstract spaces.

The style of life will differ vastly in the large, complex university from that in the small liberal arts college, technical or other special school, the community college, junior college, or teachers' college in a small town or rural setting. Institutions of higher learning range in size from less than 1,000 students to those with well over one hundred thousand located on several different campuses. In many small liberal arts colleges, each faculty member may teach four to five classes each term, sometimes involving different subjects. These small colleges provide a warm and friendly environment in which faculty and students come to know each other extremely well. Such institutions are chiefly devoted to teaching and they attempt to meet the cultural needs of the community where they are located. There is little pressure on faculty members to conduct research. It is in these small schools that the more tranquil, relaxed college atmosphere is to be found.

The large institutions include state colleges and universities, land grant colleges and universities, the large public universities, and the large privately supported institutions. These large institutions are the biggest producers of graduates with advanced academic and professional degrees. They are the bulwarks of research. The state-supported institutions may provide off-campus education, conferences, seminars, workshops, and meetings for special groups of people such as salesmen, businessmen, and farmers. The large private universities tend to emphasize support of scholarly journals and international symposia.

In higher education, as a rule, the teacher is much freer than the public school teacher to exploit the creative possibilities of teaching. In relation to the individual, the college teacher's task is to help him to hammer out a capacity to analyze values, relationships, and proofs in relation to ideas he encounters and to generate his own ideas. To do this, the college teacher must have the ability to acquire, understand, evaluate, and retain knowledge in an orderly manner, and to assimilate experience in all its forms.

The college teacher lives as it were constantly with unfinished business. On a day-to-day basis, as his classes meet, the effects of his teaching may sometimes be difficult to see. But he is geared to working towards distant goals and he may play a lifetime role in the lives of his students, backing them for appointments and lending luster to their qualifications by having been their teacher, especially if he happens to be one of "the men" in his field. But the unfolding life of the teacher in a great school is prescribed to be more than a teacher, however magnificent he may be in that role. It is not enough that he involves others in sharing the excitement of learning; he must be an original contributor to the life of the mind.

The professor may become a very influential man in his society and lead a dramatic life. He may spend time

jetting over the country, meeting Congressional committees, advising cabinet members, and attending international conferences. He may be quoted widely, be frequently mentioned in the press and on TV, and be a celebrity in the eyes of the public. If he is a man of action, he may do research in the strangest jungle, the meanest aboriginal village, or alone on an ice field at the edge of the world. He may not have a disposition for fanfare and prefer a life of profound study out of the limelight. He may make revolutionary contributions to fundamental knowledge, tackling deep social or scientific problems which have been there waiting to be solved. He may have the unsurpassed joy of making some of man's supreme discoveries because he enjoys the academic freedom to think intuitively on all man's questions about the unknown and unresolved.

But the teacher-scholar in higher education may face grave tensions and conflicts for the very reason that he does have these opportunities. He is in a highly competitive situation in which there is a constant demand for output of original work to differentiate the creative from the pack. Instead of being creative "as naturally as leaves grow on a tree," he is pressured to produce and he may react by "drying up." It is fatal to relax; once the foothold on the perch of creative status has been lost, it is not easily regained. The scholar may achieve much acclaim for an original piece of work only to be unable to follow it up; he may nevertheless be able to live out his days with an aura as a "great man."

There is a tendency among university populations, in their impatience with the trivial, banal, and tasteless, to develop specialized cultures, the members of which write for each other, or compose music for each other, or in various ways address themselves to a specialized, rather than to a wide but less sophisticated, audience. But they may suffer frustration that their products do not reach wide audiences but are confined to the more narrow academic culture.

RELATED LEISURE PURSUITS: Scholastic interests.

ILLUSTRATIVE TEMPERAMENT ROLES: Versatility as the work offers continual intellectual challenge, unending contact with people and ideas and events, at home and abroad. Dominant in that the college teacher is expected to set standards; he must stand on his own grounds, rely on himself and not on the basis of authority alone. Gregarious to really enjoy people. The misanthropic person who dislikes people generally or who becomes bored with people is not likely to become a good teacher. Influencing - the college teacher is more important as a person than as a method - it is as a person that he transmits the excitement of learning. Valuative to be able to question hasty or partial answers to difficult questions. Objective to be able to step back from his culture and critically assess it.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas in being able to constantly find new ways to communicate old ideas and to articulate fresh ideas. Abstract, Creative in that work of college teaching is much involved with abstractions, generalizations, and symbols, and there is required of the person the capacity to permit the interplay of ideas and approaches from many areas of learning and human experience. Social Welfare for it is said that an effective approach to teaching must be based upon a belief in at least the limited perfectability of man. Prestige in that college teachers are influential in society; they may achieve world-wide fame during their careers; and the greatest of them survive after death as historical figures.

LIBRARY, ARCHIVAL, AND MUSEUM. Work, training, and leisure pursuits concerned with the maintenance of libraries, museums, archives, art galleries, and botanical and zoological gardens.

Explore DOT OGA: 10 Occupations in Museum, Library, and Archival Sciences

Related Career Possibilities: 09 Occupations in Education; 05 Occupations in Social Sciences; 13 Occupations in Writing

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: A strong liberal arts curriculum is regarded as the soundest basis for becoming a professional librarian, but there is room for wide latitude in major - art, music, economic, political science, sociology, the natural and physical sciences. To be admitted to a professional school to acquire a master's degree in Library Science, the candidate usually must possess the bachelor's degree; a superior academic record, and be able to use one foreign language. There are three elements in the program leading to the master's degree: (1) a series of introductory or core courses which transmit knowledge of the underlying principles, processes, materials, and techniques of librarianship; (2) specialization within one of the areas of librarianship - school, public, academic, or special libraries - cataloging, reference, administration, etc.; and often (3) courses outside the library school, such as chemical bibliography for the chemical librarian, curriculum development for the school librarian, the American community for the public librarian. Some libraries offer trainee positions to college graduates without specialized library training. There frequently exist community sponsored training programs for library assistants.

About half the people on a library staff usually are professional librarians. The balance of the staff, which includes workers such as charge clerks, pages, and various library assistants, are not fully trained in library science. All people in library work should have an academic high school preparation and as broad a background as possible in science, the arts, literature, languages, and social sciences. Preparation as a historian is one of the main training grounds for archivist. Museum work is entered in a number of ways. Some schools offer an M.A. in Museology.

RELATED LEISURE PURSUITS: An attachment for books and love of reading. Wide reading interests: biographies, history, travel, science, poetry, drama, fiction. A special hobby in science, law, music, health, etc., which represents a strong interest but not a basic career ambition may be the foundation for a career as a special librarian- medical, legal, engineering, etc. Belonging to a library club or organizing one. Assisting high school librarian. Visiting and using as many libraries as possible. Reading surveys of reader interests, following best seller lists, etc. Reading and writing book reviews. Keeping up with current events. Belonging to a current events club. Part-time or temporary work as junior library clerk or library page. Visiting museums. Hobbies constructing dioramas, and other types of museum exhibits. Member of historical society or club. Editing of historical materials. Manuscript work which involves the preservation, identification, and classification of documents of historical nature. Interest in heraldry; engaging in "family tree" research. Interest in study of arrangement of materials in museums, archives, and repositories.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): "The role of the public librarian," says Karl Shapiro, Pulitzer prize-winning poet and past consultant in poetry to the Library of Congress, "is to keep the channels leading to creativity open and to prevent any attempt to seal off the creative forces for the delectation of the few." The Smithsonian Institution is a museum founded for the "increase and diffusion of knowledge among men." The free public library and the free museum are arms of education hardly less vital in society than the school system itself. Many great minds have owed their development more to the library than to the school system and have given public testimony to the library as their liberal arts college, their creative workshop, their research facility: Eleanor Roosevelt, Dylan Thomas, Thomas A. Edison, Guglielmo Marconi, Thomas Hardy, Frank Lloyd Wright.

The great dividing symbol of the free and totalitarian society is the two extremes of the philosophy of reading: books piled high in the public square and put to the torch or books set out on shelves for every hand to reach. The invention of the printing press heralded the freeing of the common man from the tyranny of a learned elite which kept knowledge arcane and inaccessible. More than any institution the libraries battle day by day for the cause of freedom to read. They are noncommitted to any group. The library is for the casual reader and the creator; the laborer and the student; the expert and the tyro. There are no prerequisites, except reading comprehension, standing between the user and use of any knowledge which the library stores. The library acquires sources of knowledge before they are scarcely known in universities. It is the home of the true scholar who pursues learning for its own sake and it puts basic research resources at the disposal of the student and workman for his most practical and immediate needs.

Karl Shapiro calls librarians the "hardest workers in any profession" characterized by "extraordinary self-lessness in their dedication," generalists who are many specialists rolled into one, with the agility of mind to leap without hesitation from the subject of Renaissance dueling to the methods of apple tree propagation.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious in a warmth towards people which manifests itself in a manner of sincere helpfulness. Versatile in quick turning of mind from the needs of one person to the next, e.g., the woman asking for a book on Yoga, the workman looking for a carburetor repair manual, the student asking about a new Pasternak translation. Valuative in selecting books, records, maps, newspapers, records, magazines, films, artifacts, art and nature objects, and curiosities for library or museum. Influencing in arranging museum or art gallery exhibits to make them appealing to the public and inspire their interest in an age or place. Dominant for library, archival, or museum administrators.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas - whether archivist, museum curator, or librarian, the worker is absorbed in providing facts, knowledge, and information to people. Social Welfare as the LIBRARIAN'S perceptiveness of changing needs and interests of community in activities such as studying motivations and reading needs of home-bound aged, the convalescent, the reader with little formal education, and the isolated farmer. Abstract, Creative as the SPECIAL LIBRARIAN helping the actor research the facial expressions and hair styles of Portuguese fishermen so that he can more authentically portray a part OR the CHILDREN'S LIBRARIAN assisting children to understand from books the world's wonders OR the MUSEUM DIRECTOR recreating an AUDUBON painting in a diorama OR the planning of a botanical garden exhibit which will simulate a tropical forest. Prestige in esteemed position in community and national life.

JUDICIAL SERVICE AND LEGAL WORK. Work, training, and leisure pursuits related to municipal, county, state or federal laws, regulations, court decisions, and other legal data upon which the legal system and law enforcement is based.

Explore DOT 110 Lawyers; 111 Judges; 119 Legal and Judicial, n.e.c. (abstractors, law clerks, title examiners)
OGA's:

Related Career Possibilities: 165 Public Relations; 166 Personnel and Training Management; 168 Inspecting and Investigating; 169 Administrative Specializations; 188 Public Administration Managers and Officials; 191 Agents and Appraisers; 195 Social and Welfare Work; 09 Education; 13 Writing; 205 Personnel Clerks; 212 Tellers; 24 Misc. Clerical; 37 Protective Service Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Law - specializations such as Corporation, Criminal, Civil, Admiralty, International, Patent, Real Estate, Tax, Tort, Trust. All states require practicing lawyers be admitted to the bar of the state. This requires the passing of a written examination. Legal training is often combined with some other area of professional preparation, particularly accounting. The training may be applied in private practice or the lawyer may be employed by the government or private organizations. Judges may be elected or appointed public officials.

RELATED COURSE AREAS: Bills and Notes, Brief Writing and Oral Argument, Business Law, Civil Procedure, Civil Rights, Collective Bargaining, Constitutional Law, Contracts, Criminal Law, Damages, Debate, Domestic Relations, Economics, English, Equity, Estate Administration and Taxation, Evidence, Food and Drug Law, Government Law, History, Insurance, International Law and World Order, Jurisprudence, Labor Law, Labor Relations Law, Labor Standards and Social Security Legislation, Legal Accounting, Legal Bibliography, Legal Ethics, Legal Research and Writing, Legislation, Logic, Negotiable Instruments, Parliamentary and Legislative Procedure; Patent, Trade-Mark and Copyright Law, Pleading and Practice, Psychology, Public Law, Public Speaking, Public Utilities, Social Studies, Taxation, Trial Court, Trusts and Estates, Wills.

RELATED LEISURE PURSUITS: Activities which demonstrate the public-minded interests of the individual. Interest in pure logic. Criminology. Public speaking and debating; member of debating team or public speaking group. Participating in conventions, political and civic groups, etc. Being an authority on parliamentary procedure. Attending public hearings, civil or criminal trials. Conducting research on such subjects as various state statutes governing admissibility of various kinds of evidence in criminal trials. Making studies of trial proceeding records to analyze points of reasoning involved. Looking up facts or the laws and applying to a situation as a basis for proving a point in logical discussion. Elective office in school.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): In getting a practice established, a lawyer may have to go through a "starvation period," i.e., a few months or years on a very low income. His roles may be that of advocate (pleader in court), attorney (agent or representative in negotiations), and legal counselor (advisor). He must adhere to rather well established standards of conduct and life style. He is frequently called upon to be active in community leadership positions, including political posts, and to give time to activities such as legal aid. He is governed by a strict standard of ethics in relation to his colleagues and to his clients.

Among special requirements: High reasoning ability--think logically, see through specious arguments. Spot loopholes in evidence. Reason by analogy. Assimilate a mass of information and draw inferences that are logically sound. Accuracy in judging the logical correctness of inferences. High linguistic facility - wide vocabulary. Ability to write so that meaning is unequivocal. Reading comprehension of very difficult levels, especially material of legalistic content. Accuracy of technical information about the statues and the common law. Keenness to analyze a complicated situation and by research explore the intricacies of the law which apply to the problem - thoroughness in marshalling the precedents and citations which apply. Capacity for ready and accurate recall both of details of cases and applicable laws and precedents. Skill in pleading in court. Social intelligence to be effective in dealing with people. Ability to adjust to time pressures and long hours of tedious research. Ability to "ad lib," extemporize. For judicial service jobs, particularly, ability to be detached and free of bias in dealing with situations.

ILLUSTRATIVE TEMPERAMENT ROLES: People in judicial and legal pursuits require a capacity for objectivity to prove points by facts and closely reasoned logic; to judge situations in terms of established laws, statutes, or precedents which apply; to keep out of consideration information which cannot be proved. However, the lawyer's objectivity (except for judges) may and usually does take place within a partisan frame of reference, i.e., he must adopt a point of view in line with his client's interests. His search for evidence and law is in terms of substantiating the particular position he assumes and he must be of the temperament to rationalize the facts to suit his objective--winning his client's case (this might be contrasted with the physician or scientist who normally look for and consider all the facts in arriving at a point of view).

Lawyers must be valuative in anticipating insofar as possible the actions of the opposition, as the trial lawyer "sizing up" a jury before preparing summation of a case OR the judge basing decisions on what he sees as the preponderance of evidence in a case and exhibiting sensitivity to human as well as strict legal values. The most frequent activity of the lawyer is dealing with people in providing legal guidance to them in the conduct of their affairs. Although it is said that a lawyer is primarily interested in his client's case rather than his client as a person, he must be effective in face-to-face contact with people in order to gain their confidence and secure the information necessary to develop the case and apply the law meaningfully. Dominance is necessary in assuming responsibility for a legal practice, in taking charge of all kinds of legal problems of clients when their liberty or fortunes are dependent upon the lawyer's management of the situation. The lawyer needs the capacity for self-control in crises with the emotionally disturbed whom he may represent and when confronted with surprise evidence by opponent in the course of a court trial.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas in ability to project self into the many kinds of situations and problems in which people and organizations get involved, acquire an understanding of the situation and its legal implications, and be effective in communicating a point of view regarding it, either orally as when pleading in court, or in the preparation of opinions and briefs. Business Contact in the handling of all kinds of legal business matters for clients and in advising clients on the conduct of their business affairs. Prestige, being often in the public eye, and because of the opportunities offered for political attainment (frequency with which posts in government, at all levels, are staffed from the ranks of law). Abstract, Creative for the trial lawyer who requires fertile imagination to construct explanations, often from the barest shreds of evidence. Much legal oratory and writing has achieved classic standing in the cultural tradition and its literature (works of Darrow, Hand, Holmes, etc.) is valued greatly for its creative insight into the behavior of man.

RELIGIOUS WORK. Serving the spiritual needs of people.

Explore DOT OGA's: 12 Religion and Theology

Related Career Possibilities: 045 Psychology; 052 History; 054 Sociology; 09 Education; 13 Writing; 165 Public Relations; 195 Social and Welfare Workers

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

SPECIAL NATURE OF RELIGIOUS OCCUPATIONS: Religious activities are carried on by 1) people who devote their lives to the callings and as a rule take specialized training for the work and 2) lay workers. In the sacred orders of some religious bodies, the occupations are not salaried. Religious work includes not only ministerial work, but religious education, social work, missionary work, medicine, music, recreation, and business administration.

RELATED MAJORS AND SPECIALIZATIONS: Theology, Religious Education.

RELATED COURSE AREAS - JEWISH: English Literature, Group Work, Hebrew Language and Literature, Hebrew Philosophy, History of Jewish Music and Liturgy, Human Relations, Jewish History, Jewish Religious Education, Jewish Religious Thought, Midrash, Pastoral Psychology, Psychology, Sociology, Talmud, Theology, Traditional Synagogal Chants.

RELATED COURSE AREA - ROMAN CATHOLIC: Apologetics, Canon Law, Christian Doctrine, Church History, Civilization Past and Present; Dogmatic, Moral, and Pastoral Theology; Geography, Greek, Gregorian Chant, History, Homiletics, Latin Fundamentals, Literature, Liturgy, Mathematics, Natural Science, Rhetoric and Elocution, Rural Life, Social Science, Sociology and Social Problems.

RELATED COURSE AREAS - PROTESTANT: Biblical Archeology, Christian Doctrine, Christian Evangelism, Christian Missions, Christian Sociology, Church History, Church Music, Construction of Sermons, Delivery of Sermons, Foreign Languages, Greek, Hebrew, History, Homiletics, Natural and Social Sciences, Pastoral Counseling, Psychology, Psychology of Religion, Religious Education, Religion, Sociology, Theology, Worship.

FOR ALL: Bible, Comparative Religion, Ethics, Metaphysics, Ontology, Philosophy, Public Speaking, Western Religious Thought.

RELATED SPARE-TIME PURSUITS: Participation in religious, social, or service organizations. Activities that have included teaching, group work, camp counseling, adult education, social work and public speaking. Serving as church or synagogue officer or usher. Collecting Bibles, magazines, clothing, etc., for missionaries. Activity in Jewish Relief, Catholic Charities, or Protestant missionary fund drives. Visiting shut-ins, invalids, hospitalized persons. Holding meetings in city missions for homeless men. Organizing prayer or study group meetings in homes. Taking part in visitation campaigns to encourage new people to attend religious services; taking church census. Serving in musical activities - playing organ or piano, singing, serving as Cantor. Directing volunteer choral group. Lay work in arranging weddings, funerals, church socials, Bar Mitzvahs, and activities in connection with Sabbath or holy days. Making displays for religious holidays. Distributing tracts, pamphlets, etc., in public places.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Strongly motivated to serve God and fellow man. High moral and ethical standards. Positive religious faith. Field is one of extreme diversity and no set of traits is universally associated with the field. Role status differs greatly within different religious bodies and ambiguity of role is frequent. The theologian may deal with levels of abstraction related to logic and science. In the clergy, the skills may be akin to the highest order of literary and oratorical art. On the other hand, in some religious groups there are no literary requirements. Capacity to identify with and relate to the unlearned may be critical. The role of the minister in some churches is ritualistic, structured, and institutionalized. In others it is evangelical and free wheeling. It has been said that the dilemma of many ministers is "maintaining the image of a charismatic leader while acting as a bureaucrat." Many religious workers, particularly the clergy, must adjust to almost round-the-clock demands on their time to offer spiritual solace to those in trouble, suddenly ill or dying, or facing other emergency. In some religions, the workers are actively concerned with social problems and are in the forefront in championing social reforms. Some faiths nurture a deep feeling for scholarship and achieving religious insight through meditation and contemplation.

ILLUSTRATIVE TEMPERAMENT ROLES: In their pursuits these people are people oriented and are involved in both interpersonal and group relationships. Success usually requires of them the personal warmth which invites approach by individuals who are in need of spiritual or other counsel. CLERGYMEN, particularly, must often exhibit a high order of social skill to mediate personality clashes and differences of opinion among members of a congregation over policies.

People engaged in religious activities tend to follow a valuative approach in their thinking. They may depend upon revelation or upon intuitive cognition and the inner life as a basis for finding meaning. A submissive role may be involved in conforming to traditional rituals in liturgical forms of worship and in adherence to dogmas of a particular faith.

CLERGYMEN must often assume dominant roles in such situations as directing the work of people in religious and related educational and civic affairs and in administering and coordinating congregation activities. They display versatility in their wide range of community participations, serving on boards and committees, and presiding at various ceremonial or ritual functions. They strive to influence people when delivering sermons designed to impress a point of view upon a congregation or to convert others to a particular faith. Self-control is required of them in such situations as administering last rites to a dying person among hysterical relatives or a horribly mutilated accident victim.

ILLUSTRATIVE INTEREST INVOLVEMENTS: The social betterment or humane tendencies of religious workers find expression in such activities as giving personal guidance to individuals, visiting the sick and mourners in need of comforting, and in leading community projects of a socially desirable nature. Prestige is associated with the trusted and influential status of religious work.

The CLERGYMAN is constantly in the role of communicating ideas. This may be the Jewish Rabbi interpreting the principles of Jewish faith to persons in all walks of life OR the Protestant clergyman arranging social, cultural, or recreational groups to promote interfaith understanding OR the Roman Catholic priest hearing confessions or conducting the daily celebration of the mass.

CLERGYMEN are often creative in the preparation of sermons and articles which deal with fresh insight on scripture and its relationship to life or spiritual problems AND in new theological interpretations of Biblical thought.

GUIDANCE AND SOCIAL WORK. Work, training, and leisure pursuits which relate to serving others as mentor, counselor, or adviser.

Explore DOT OGA's: 045 Psychology (Counselors); 195 Social and Welfare Workers

Related Career Possibilities: 054 Sociology; 09 Education; 12 Religion and Theology; 205 Personnel Clerks; 237 Receptionists and Information Clerks; 241 Adjusters

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Clinical Psychology, Counseling and Guidance, Counseling Psychology, Counselor Education, Personnel Psychology, Rehabilitation Counseling, Social Work, Vocational Guidance.

RELATED COURSE AREAS: Abnormal Psychology, Applied Psychology, Art Activity and Personal Development, Behavior Disorders, Behavior of Physically Handicapped, Casework, Child Psychology, Clinical Psychology, Comparative Religion, Conference Techniques, Counseling Techniques, Courtship and Marriage, Educational Psychology, Family Relationships, General Psychology, General Statistics, Group Dynamics, Group Guidance, Housing, Industrial Psychology, Institutional Care, Interviewing, Labor Relations, Medical and Social Work, Mental Hygiene, Minority Group Social Work, Nondirective Therapy, Occupational Information, Ontology, Personal Adjustment, Personality Theory, Personnel Psychology, Personnel Selection, Philosophy, Projective Techniques, Psychiatric Concepts, Psychiatric Social Work, Psychodrama and Role Playing, Psychological Tests, Psychology of Adjustment, Psychology of Motivation, Psychology of Occupations, Psychotherapeutic Casework, Psychotherapy, Public Assistance, Public Speaking, Race Relations, Recreation Methods, Rehabilitation Counseling, Retirement Counseling, Rural Sociology, School Counseling, Social Conflict, Social Group Work, Social Insurance, Social Psychology, Social Science, Social Welfare, Sociological Theory, Sociology of Child Development, Tests and Measurements, Test Interpretation, Urban Sociology, Vocational Guidance, Western Religious Thought. Overview Science (overview of Social, Biological, and Physical Sciences). All Liberal Arts and Humanities Courses.

RELATED LEISURE PURSUITS: Interest and achievement in social studies; participation in service and social organizations. Church projects, counseling at summer camp, interviewing persons, Red Cross participations, volunteer work with disadvantaged, teaching underprivileged children. Leadership in teenage activities (Campfire Girls, Scouts, etc.). Visiting shut-ins, invalids, hospitalized persons, etc. Elective office in school. Leadership or activity in organizations committed to the solution of social problems or to working with individuals to help them with their problems (prevention of blindness, deafness, etc., control of juvenile delinquency, problems of illiteracy, recreational needs, etc.). Interest and work with societies of any humanistic nature. Any activity involving listening to people talk to help them think out a problem. "Learning" pursuits related to the field as evidenced by books and periodicals read and study groups, forums, lectures, etc., attended.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Desire for a way of life that involves helping people and working directly with their minds and feelings. Capacity to be "other-related," i.e., to really care for others and to forget self-concerns for much of the time in order to concentrate on the problems of others. Attitude of keeping people in mind as individuals and not lapsing into impersonality; sensitivity to their wants, needs, and frustrations; skill in regulating own reactions when dealing with them. Stamina of personality to withstand activity that may be emotionally exhausting when it involves almost continuous listening, making great demands upon worker's empathy. Understanding of human emotions and motivations and criteria of normal and neurotic adjustment. Appreciation and valuation of individuals from other groups, religions, cultures, etc. Respect for both ethical and scientific values. Personality makeup which puts all types of persons at ease in presence, encouraging their self-expression. For some jobs, skill in securing case histories and evaluating environmental factors; in others, expert knowledge of individual differences as related to occupational, educational, or other adjustment problems. Often, ability to give psychological tests and interpret results. Frequently ability to write creatively and to lecture in a manner to command interest.

ILLUSTRATIVE TEMPERAMENT ROLES: The ability to establish warm relationships with others is an essential prerequisite for these activities. In many, there is required a special capacity to relate to a counselee, client, or patient in a manner to help him achieve insight and give him emotional support as he works out problems involving life stresses. In some situations, as when the rehabilitation counselor makes clinical appraisals on the basis of unique combinations of data, the point of view is valuative. When he interprets aptitude test results on the counselee in the light of standard norms and limitations of tests, it is objective. Dominance is often necessary in the conduct of negotiations with other professional specialists, in public representations of organization with which affiliated, making speeches to groups, and the like.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Social Welfare as in leading group work in a manner to promote the development of social attitudes and adjustments OR in dealing with situations which make great assault upon compassion, as with the hopelessly ill, or persons in severe pain, anxiety, and trouble. People and Communication of Ideas as in providing personal guidance to individuals and in communicating to public via such media as talks or interviews, or newspaper publicity, the advantages of such progressive and socially desirable goals as improving educational facilities, achieving interrace understanding, or community action to combat juvenile delinquency, improve housing, eliminate poverty, etc. Abstract, Creative as in the counselor's goal to release capacities and potentialities of persons whom he seeks to aid in personality growth. Scientific in disciplined regard for all facts whether or not in accord with own preconceptions AND in adhering to scientific method in using projective and other personality appraisal techniques. Prestige in respected position in community and sense of the social importance of role.

HOME ECONOMICS AND DIETETICS. Work, training, and leisure pursuits related to the science and art of homemaking or to the sciences of nutrition and food management.

Explore DOT OGA's: 077 Dietitians; 096 Home Economists and Farm Advisers

Related Career Possibilities: 04 Occupations in Life Sciences; Other Classifications in 07 Occupations in Medicine and Health; 09 Occupations in Education; 31 Food and Beverage Preparation and Service Occupations; 32 Lodging and Related Service Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Home economics, dietetics, food science and management. Persons in this field who teach must hold a teacher's certificate. Dietitians are usually required to serve an internship.

RELATED COURSE AREAS: Art, public speaking, English, bookkeeping, food trades, dressmaking, household operations courses in high school may be helpful.
Courses: Chemistry, Child Development, Clothing, Dietetics, Economics, Family Relationships, Foods and Nutrition, Health and Hygiene, Housing, Housing Equipment and Furnishings, Physiology, Pyschology; Social, Physical, and Biological Sciences.

RELATED LEISURE PURSUITS: Everyday activities which demonstrate a more than average interest in the comfort and pleasure of the family group or enthusiasm for the planning and preparation of meals. Curiosity about food exhibited through interest in recipes, planning menus, food marketing, studying the nutritional aspects of meal planning. Interest in sewing activities: dressmaking, making draperies, etc. Trying out new ways to entertain. Activities such as sports and club work which demonstrate leadership and the ability to get along with others. Child care, club work or other activities dealing with home and community hygiene. Taking part in group activities such as scouting, debating, dramatics, or sports which demonstrate leadership ability, poise, understanding of people, writing and speaking skills. Along with activities such as these, interest in life sciences as demonstrated by reading, lectures attended, science club activities, etc. (e.g., dietary experiments with rats, metabolic studies with mice, devising ways of keeping potatoes from spoilage during storage, running tests on unknown bacteria, antibiotics experiments, study of diet habits of primitive people, trace elements in human nutrition, etc.)

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Persons whose interests are very much focused on homemaking and domestic spheres of life find these occupations to be "naturals" for them, if their science aptitudes are sufficiently strong. The skills may be applied in a very wide range of situations: teaching, social welfare, working for industry, university research, on a hospital staff, home demonstration work for county governments, newspaper work, and in other institutions of all kinds. Moreover, these skills and knowledges are always of great value to the person in own domestic responsibilities.

In some jobs the relationship to other people is chiefly on a face-to-face basis. Other jobs are in large institutions where the personnel organization is structured and the worker is part of a team.

ILLUSTRATIVE TEMPERAMENT ROLES: Versatile in wide-ranging activities engaged in: planning, consulting, demonstrating, testing, teaching. Dominant in such activities as planning diet schedule for institution, supervising food purchases, and developing menus. Gregarious to work with people of various standards and backgrounds. Influencing as a HOME ECONOMIST employed by an industrial firm to promote the development, use, and care of specific home products. Valuative in that much of the work of the HOME ECONOMIST and the DIETITIAN requires discriminating taste.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in activities such as making purchases, acting as a consultant to business firms, etc. Social Welfare in that work basically involves serving people and being interested in their welfare, whether it is their nutritional needs or the solution of their homemaking problems. This may be the HOME ECONOMIST helping to solve homemaking problems for the low income mother or helping handicapped homemakers adjust to physical limitations by changing the arrangements in the home or revising methods of work. It may be the DIETITIAN in working with such problems as that of the mother whose newborn baby is afflicted with some inborn error of metabolism, in which the child's life or normalcy depends upon the dietitian's ability to develop a satisfactory therapeutic formula. It may be developing a salt-free diet for the heart patient, or the convalescent diet for the rheumatic fever patient. People and Communication of Ideas in activities such as presenting programs on radio and television, or discussing nutrition with expectant and nursing mothers, teaching lessons in baby care, or giving counsel to young mothers with their first babies. Scientific because much of the work is based on scientific principles and methods and workers must have the aptitude and interest in science necessary to master its scientific aspects. Abstract, Creative in originating menus, devising new food recipes, inspiring ordinary homemakers to new standards of excellence in their homemaking arts, or working with manufacturers to develop new products or improve old ones. Prestige in that these professions, whether the work is chiefly contact with individuals or on the staff of an institution, are rewarding in terms of the esteem of others.

PROTECTING, PUBLIC SERVICE. Work, training, and leisure pursuits concerned with protecting persons and property by enforcing laws, regulations, practices, and codes governing morality, sanitation, immigration, traffic, fire prevention and control, and similar activities carried out to maintain order or to protect the general health and welfare of the public.

PROTECTING, PUBLIC SERVICE can be subdivided into four distinct activities:

FIREFIGHTING. These activities involve protecting life and property from fire.

Explore DOT OGA: 373 Firemen, Fire Department

POLICING. These activities involve chiefly the maintenance of law and order on the part of individuals and groups.

Explore DOT OGA: 375 Policemen and Detectives, Public Service

INVESTIGATIVE AND ANALYSIS WORK. These activities are aimed at protecting the public interest and welfare through investigations and technical analysis to maintain laws and standards or to detect their violation.

Explore DOT OGA's: 168 Inspectors and Investigators, Managerial and Public Service;
375 Policemen and Detectives, Public Service

PROTECTING, n.e.c. This category comprises a loosely related group of workers such as military personnel, elected law enforcement officials (e.g., sheriffs and bailiffs), guards in correctional institutions, and people who maintain law and order in situations other than public service.

Explore DOT OGA's: 372 Guards and Watchmen, Except Crossing Watchmen;
376 Policemen and Detectives, Except in Public Service
377 Sheriffs and Bailiffs
378 Soldiers, Sailors, Marines, Airmen, and Coast Guardsmen, n.e.c.

Related Career Possibilities: 371 Crossing Watchmen and Bridge Tenders
379 Protective Service Occupations
169 Occupations in Administrative Specialties, n.e.c.
191 Agents and Appraisers, n.e.c.
199 Misc. Professional, Technical, and Managerial
441 Forest Conservation Occupations (Firefighters and Lookouts)
451 Hunting and Trapping (Gamekeeping)
11 Occupations in Law and Jurisprudence
153.268 (Umpire and Related)

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (FIREFIGHTING)

RELATED COURSE AREAS: Some FIREMEN are hired with only elementary school education, but high school graduation with courses in chemistry and physical education is preferred. Exacting physical and mental tests are required for entry into the work and for promotion. Fire departments conduct specialized training programs for recruits. Courses: Arson Detection, Artificial Resuscitation Techniques, Fire and Building Codes, Fire Investigation and Incendiarism, Fire Prevention, First Aid, Forcible Entry, Hydraulics, Rescue Work, Salvage, Use of Fire Fighting Equipment, Ventilation.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): In these activities which involve protecting life and property from fire, the emphasis is upon personal qualities of physical robustness, courage, team discipline, and capacity for quick thinking to function in face-to-face struggle with uncontrolled fire and disasterous conditions which result: explosions, sudden roof cave-ins, toppling walls, and release of poisonous or flammable gases and chemicals. The occupation of FIREMAN has limited transfer value, although numbers of FIREMEN do transfer to police work. Because of long periods of "killing time" between calls, FIREMEN often develop hobbies which they pursue on the job, such as: reading, playing games, or manual art crafts. Others use the time to take correspondence courses to prepare for a "second career" (FIREMEN have a very young retirement age). Considerable nervous tension can affict a FIREMAN, and the capacity to relax is important in adapting to the work.

RELATED LEISURE PURSUITS: Volunteer firefighting. Civil organization leadership, e.g., Scouts, reserves, Boys' Clubs. Participation in club programs directed toward public safety goals, such as volunteer firefighting or traffic regulation. Membership in Boy Scouts, with work on First Aid and related merit badges. School safety patrol. Serving as lifeguard. Athletics of all kinds, especially those which involve running and climbing.

ILLUSTRATIVE TEMPERAMENT ROLES: Dominant as the FIRE MARSHALL directing fire crews or effecting prompt evacuation of inhabitants from burning buildings. Self-Controlled to perform adequately under stress as the FIREMAN at a catastrophic fire who keeps a clear head regardless of personal danger and by his behavior allays panic and discourages fatal leaps. Valuative in instant judgments required to balance danger to own life with the danger to others in need of rescue from a collapsing building AND in personal decisions when to press or abandon the fire fight. Gregarious to the extent of developing the social skills necessary to get along amicably with co-workers during long periods of inactivity at firehouse. The capacity to be Submissive, i.e., working under specific instructions, is critical during the emergency period of actual firefighting, when all orders must be obeyed to the letter.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Things and Objects to adapt to working with lifelines, nets, chemical extinguishers, ladders, and other firefighting equipment. Business Contact in such tasks as inspecting factories, theaters, and other public buildings for compliance to fire codes AND in dealing with the public about matters in dispute, e.g., amount of water damage resulting from firefighting operation. Social Welfare in such duties as administering artificial respiration to persons overcome by fire and smoke OR in humanitarian activities such as rescuing pets from trees and water OR administering emergency first aid to accident victims.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (POLICING)

SPECIAL NATURE OF LAW ENFORCEMENT OCCUPATIONS IN PUBLIC SERVICE: A very wide range of backgrounds is possible in this work. FBI SPECIAL AGENTS are required to hold law, accounting, or, in a few cases, other kinds of degrees. In police work generally the requirements may range from a degree in police science or criminology to the acceptance of less than high school graduation in many smaller communities. Closely related jobs such as SHERIFFS may be elected officials and have no set qualifications. CORRECTION OFFICERS in penal institutions usually do not have set qualifications. Eligibility for appointment and advancement in police work is based on passing physical and mental examinations for the work. Most police departments conduct specialized training programs of a few months duration for new recruits which include instruction in State laws and local ordinances, and procedures to be followed in accident investigation, patrol, traffic control, and how to use a gun, combat attack, and administer first aid. Training or experience in nursing or social work is valuable for POLICEWOMAN. To enter these jobs, usually a long or a lifetime record of good behavior is required. Average appearance and inconspicuous features and personality are an advantage, especially for plain-clothes men in undercover work.

RELATED MAJORS, COURSES, AND SPECIALIZATIONS: Police Science, Criminology. Training courses as well as degrees related to police work are offered at junior colleges, colleges, and universities. In high school, English, foreign languages, social studies, science, and sports (wrestling and boxing). COURSES: Abnormal Psychology, American History, Arson Detection, Artificial Resuscitation Techniques, Business Law, Chemistry, Civics and Government, Community Sanitation, Crime and Delinquency, Criminology, Economics, Government and Public Law, Humanities, Law, Law Enforcement, Municipal Administration, Penology, Physical Education, Physics, Political Science, Psychology, Public Speaking, Race Relations, Report Writing, Self-Defense: Boxing, Wrestling, and Judo; Social Conflict, Sociology, Swimming, Traffic Management, Typing and Shorthand.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): J. Edgar Hoover says that no definition of police work can adequately convey the full meaning of the LAW ENFORCEMENT OFFICER's daily contact with the "raw material of life itself." Because of the violence which may engage the POLICEMAN, some sociologists feel that police work as a career should be discouraged for those with excessive hostility in their makeup. It is no less unsuitable for those who cannot conceive of themselves as facing and coping with violence--even to kill--if necessary. Other sociologists point out that along with the POLICEMAN's manifest role of controlling defiant behavior is the latent one one of providing emotional support to people in trouble and distrubed people, e.g., reducing the anxiety of the would-be suicide. The individual POLICEMAN must exercise a kind of "clinical judgment" about complaints and calls for help.

A POLICEMAN in talking about his work has said that lawyers spend weeks preparing a case, a judge spends weeks considering it, but that his own decisions must be made in seconds: "Does the suspect have a knife? If I don't hit hard enough he can kill me; if I hit him too hard, I'm brutal and must be prepared to explain it. I have to know instantly that this man is a drug addict and that one a diebetic in shock; know instinctively that the man going into the building with the suitcase is a burglar and not the building superintendent." The POLICEMAN needs stamina and toughness to accept with equaniminity the enmity of convicted criminals who may wish him dead and plot revenge, and great courage to function in the face of hostile mobs. He is also required to exhibit patience in filling out many detailed forms and waiting long hours in court to give testimony.

Special knowledges and abilities: Understanding of human nature, especially in relation to the motives and behavior of persons who may need to be directed, controlled, or restrained in the public interest. Personal qualities needed for effective exercise of authority, particularly in emergency and "stress" situations. Understanding of laws, ordinances, and regulations which must be enforced. (Such as traffic laws; laws of arrest, search, and seizure; own rights and rights of the individual or the public). Use of firearms and other techniques of self-defense. Ability to be a trustworthy observer and give testimony in court. For POLICEMEN on beat, capacity to stand long hours of walking in any kind of weather. For STATE TROOPERS and the like, know broad geographic areas in order to patrol with cars or motorcycles.

RELATED LEISURE PURSUITS: Civil organization leadership, e.g., Scouts, reserves, Boys' Clubs. Participation in club programs directed toward public safety goals, such as volunteer firefighting, traffic regulation, or activity to eliminate juvenile delinquency. School safety patrol. Serving as lifeguard. Sports participation. Reading interests in criminology, penology, and related. Visiting police station. Participation in police boys' clubs. Serving as a police cadet. Reading sociology, criminology, child psychology, juvenile problems. Volunteer prison work. Membership in gun clubs.

ILLUSTRATIVE TEMPERAMENT ROLES: Dominant in the effective use of authority as the POLICEWOMAN investigating public places to enforce laws protecting juveniles. Self-control to perform adequately under stress when faced with the critical or unexpected, as the perilous work of LAW ENFORCEMENT OFFICERS in coping with burglaries, suicides, murders, kidnappings, calling ambulances at accident scenes and getting victims out of smashed cars OR in being "out front" and risking life in dealing with dangerous criminals, street gangs, or raiding underworld hideouts OR in maintaining order in public emergencies such as fires, floods, and riots and rescuing persons in danger. Dealing with People in working smoothly with others in a team relationship and in working with the public. Valuative in deciding when to investigate, to arrest, to chase speeders, to use force, to quell disturbances.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Social Welfare in applying an understanding of the individual in instituting corrective measures for juveniles OR in carrying out policies to rehabilitate convicted criminals. Business Contact in the exercise of various kinds of public responsibilities. People and Communication of Ideas because of the many kinds of persons the POLICEMAN must apprehend and question: armed robbers, killers, professional extortionists, check forgers, and petty thieves, requiring of him a facility to speak the soft word, the tough word, or extend the slap on the back, whichever it takes to break the barrier between him and the defiant, desperate prisoner so that "real talk" can take place.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (INVESTIGATIVE AND ANALYSIS WORK)

RELATED MAJORS: Because of the expert knowledge required for most investigative and analysis jobs, many of them require college graduation and some graduate study as well. Depending on the type of analytical work, the following majors may relate: Police Science, Chemistry, Physics, Pharmacy, Crimonology, Biology, Bacteriology, Food Technology, Business Administration, Accounting, Law.

RELATED COURSE AREAS: These vary according to the competency: Accounting, Ballistics, Chemistry, Customs Statutes, Fingerprint Systems, Firearms and Fingerprint Identification, Food and Drug Standards, Law Narcotics, Physics, Poisons, Police Laboratory, Quality Control, Quarantine Statutes, Sanitation, Physics, Technical Report Writing.

RELATED LEISURE PURSUITS: Participation in service and civic organizations which have helped develop facility in dealing with others. Scientific, technical, or other hobbies that have demonstrated ability to interpret facts and express them orally and in writing. Special interest pursuits related to the technical and scientific aspects of crime detection.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): These activities require not so much expert knowledge of human behavior or ability to deal with emergency situations as technical competence in some specialty such as customs appraising and verification; quality control standards for consumable products; food, drug, or sanitary inspecting; fingerprinting, chemical analysis, ballistics, or related aspect of crime detection; safety codes for public buildings, mines, etc.; or rules which govern the operation of some public facility such as post offices, or insurance systems.

These people require an understanding of laws, ordinances, and regulations which must be enforced and the personal qualities needed for exercise of authority. Techniques of making investigations and collecting evidence. Ability to be a trustworthy observer and give evidence in court, and in the face of criticism and dispute, be able to defend and uphold evaluations and conclusions. For crime detection work, particularly, crime laboratory procedures which involve microscopic, chemical, ballistic, and other techniques in fingerprinting and firearm identification, detecting altered documents, etc. For many special investigators, competency in accountancy to detect frauds concealed in financial records. For people involved in maintaining food, drug, and other health facilities which affect the general health and welfare of the public, the scientific background to conduct appropriate analyses and tenacity in tracking down health hazards and taking proper action to safeguard the public health. To enter many of the jobs, a long record of good behavior is required. Average appearance and inconspicuous features and personality are an advantage for some investigators.

ILLUSTRATIVE TEMPERAMENT ROLES: Objectivity as in pursuit of all evidence in order to conclusively establish either guilt or innocence of suspect AND in constant search for provable data by which to verify determinations, as: identifying weapons on basis of caliber of model, or persons by finger, heel, or other print data OR collecting samples of food, drug, or cosmetic products for bacteriological and chemical analyses to detect impurities, adulteration, or misbranding. Rigorous as the FISH INSPECTOR who issues certificates of inspection that fish are free of infestation only after rigid examination (failure to be careful could result in widespread food poisoning) OR the SAFETY INSPECTOR checking buildings for fire hazards, expolosion risks, properly safeguarded machinery, etc., where there is no room for oversight, as lives depend on reliability of findings. Dominant in being unyielding to pressure in the enforcement of regulatory laws related to safety, customs, foods and drugs, and narcotics. Effectiveness in dealing with people in the process of making investigations of various kinds to trace missing persons, wanted criminals, or stolen cars; to track down sabotage or uncover frauds; or to get evidence on narcotics rings and other "rackets."

ILLUSTRATIVE INTEREST INVOLVEMENTS: Scientific in using analytical procedures to make technical determinations related to safety inspections, food and drug analyses, etc., and also in using scientific method to appraise evidence linking suspects with crimes. Business Contact in dealing with business representatives and members of regulatory bodies. Prestige as associated with the exercise of authority. People and Communication of Ideas to promote understanding on the part of the public of such programs as purity control of foods and drugs, acceptance of safety standards, etc.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (PROTECTING, N.E.C.)

RELATED COURSE AREAS: Private policemen and detectives profit by the same type of courses which are applicable to policemen and detectives, public service. Some of these occupations, such as sheriffs and bailiffs are elected and may come from any background. Occupations such as guards usually do not require specific qualifications. They may be entry to other protective occupations. Institutional guard is considered to be one suitable civilian occupation for those who have served in the military as M.P.'s.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Most jobs of this type are characterized by their requirements on the person of a fine edge of readiness - which is difficult to maintain - for any type of emergency situation. These people operate to maintain official control of society's organized social system, and are frequently pitted against an opposing organized social system, which may be that of organized crime or of an inmate social system in a prison. They are constantly dealing with the reactions of other people and must have the ego strength to deal effectively with aggression.

RELATED LEISURE PURSUITS: Consider those listed for other areas of Protective Service Work.

ILLUSTRATIVE TEMPERAMENT ROLES: Self-Controlled when dealing with dangerous situations such as apprehending law breakers, controlling riots, or dealing with other emergencies. Dominant as people in these roles cannot function without the capacity to exercise authority. Gregarious to cope with many types of situations involving the reactions of people.

ILLUSTRATIVE INTEREST INVOLVEMENTS: In some jobs requiring much dealing with the public, a Business Contact interest is necessary; in other jobs it is expected that a rehabilitative function will be performed and in this case, a Social Welfare interest is required.

MEDICAL AND RELATED. Work, training, and leisure pursuits related to the care, cure, or prevention of disease or injury in people or animals. Training in this area may be applied in private practice, and also in teaching, research, administration, industry, schools, public health, foreign service, and in the military forces.

Explore DOT OGA's: 070 Physicians and Surgeons; 071 Osteopaths; 072 Dentists; 073 Veterinarians

Related Career Possibilities: 04 Life Sciences; 05 Social Sciences; 09 Education; 079 Medicine and Health, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

DEGREES: M.D., Doctor of Medicine; D.D.S., Doctor of Dental Surgery; D.O., Doctor of Osteopathy; O.D., Doctor of Optometry; D.C., Doctor of Chiropractic; D.V.M., Doctor of Veterinary Medicine. Teaching and research frequently require the Ph.D. in addition.

Training for these various possibilities differs in length. The doctor of medicine may not decide on general practice or some specialization until his medical training is almost complete, but no matter what position he wants, he must first complete his premedical training, go to medical school, and serve as a hospital intern. He will need to be sustained by great ambition for he will be faced with intensive study, hard work, and very little income. Achievement in a career progresses along a hierarchial pattern, and for those in institutional practice takes place within a framework of elaborate social machinery. Authority relationships are rigid for all these roles, with medical doctors and dentists being the most institutionalized.

RELATED COURSE AREAS: In secondary school and premed: Emphasis on science - biology, chemistry, physics, zoology. Also English, mathematics, foreign languages, and humanities. In medical or other special school: Abnormal Psychology, Anatomy, Anesthesiology, Bacteriology, Biochemistry, Biophysics, Bronchoscopy, Chemotherapy, Clinical Dentistry, Clinical Laboratory Diagnosis, Clinical Microscopy, Clinical Psychology, Dental Materials, Dermatology, Embryology, Eugenics, Evolution, Forensic Pathology and Medical Jurisdiction, Genetics, Gynecology and Obstetrics, Heredity, Human Biology, Hygiene, Internal Medicine, Legal Medicine, Medical Ethics, Medical Technology, Medical Terminology, Necropsy, Neuroanatomy, Neurology, Nutrition, Opthalmology, Oral Pathology, Orthodentics, Pathology, Pediatrics, Pharmocology, Physiology, Physiological Psychology, Preventive Medicine, Psychiatry, Psychoanalysis, Psychological Testing, Psychosomatic Medicine, Radiation, Surgery and Surgical Pathology, Psychotherapy, Toxicology, Virology.

RELATED LEISURE PURSUITS: Activities which show curiosity about life and disease, coupled with an interest in the health problems of people, animals, and the community. Science activities - reading, lectures, membership in science clubs and amateur scientific research; raising experimental animals such as rabbits and guinea pigs; performing dissections and preparing anatomical specimens making microscopic slides; growing laboratory cultures. Science Fair projects, e.g., study of animal metabolism, diseases in animals, bacterial resistance to antibiotics, skin transplants using young tadpoles, prehistoric and modern diets in relation to occurrence of dental caries, diet experimentation with hamsters to reduce tooth decay, survey of gum disorders of apple eaters versus nonapple eaters. Participating in community health activities such as first aid, Red Cross life-saving, and hygiene projects. Reading of diseases, causes and treatments.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): There is room in these activities

both for brilliant top flighters who originate new procedures AND those who develop only highly skilled ability to put other people's discoveries into operation. Candidates for training must have the capacity to devote much time to what has been termed "dreary reading" and to endure long periods of doing little but observing, describing, and drawing. In practice a doctor needs what might be thought of as an encyclopedic capacity to absorb and retain a vast aggregation of information and facility in associating observed conditions with remembered information. He is constantly confronted with unique combinations of symptoms and behaviors in patients; to achieve skill in diagnosis he must have a high order of reasoning ability and discovering relationships by inference. He must be willing to undertake many unpleasant and repugnant tasks, to endure irregular hours, interrupted sleep, hurried meals, long periods without opportunity to rest and relax. Stamina is required to sustain a constant burden of tension resulting from having many people who are in pain, frightened, disturbed, or dying make demands in terms of expected therapy and emotional support. The doctor's role is generally regarded as combining that of scientist, businessman, and humanitarian. In solo practice, largely concerned with acquiring a clientele and often functioning as a "leading citizen" in the community, the emphasis may be on the last two. The specialist is usually less involved with relating his patients as individuals; his role is at once more institutionalized and nearer that of the impersonal scientist.

ILLUSTRATIVE TEMPERAMENT ROLES: The capacity to relate to people, most importantly in clinical situations, to provide emotional support to those who are physically ill, mentally disturbed, or undergoing personal tragedy. Dominance is important to assume responsibility for a medical practice and work out alone all kinds of medical problems involving human life. A valuative approach is required to act upon clinical insights deriving from a judgmental rather than a measurable basis, in willingness to deal with information that may not be clear-cut (no two case histories or sets of symptoms are ever identical), AND in interpreting data obtained by direct sensory means such as patient's expression, voice, attitude, and abnormalities apparent by palpation or touch, etc. This must be complemented by objectivity in taking into account all facts, open-mindedness in considering all opinions of consultants, and persistence in obtaining all possible verifiable information about patients by means of biopsies, blood counts, cultures, temperature and blood-pressure readings, electrocardiograms, etc. Capacity to be rigorous is required in prescribing correct dosages of drugs AND in working with utmost precision, as in surgery to time the sealing off of blood vessels or determining how far to cut. Self-Control is needed to perform adequately under stress when treating dangerous illnesses that make split-second timing a life-and-death matter; carrying out surgery with no deflection of attention regardless of distractions; AND in controlling own reactions when breaking bad news to patient or when inflicting severe but unavoidable pain in the course of medical treatment. Influencing capacity is important for imbuing patients with confidence and readiness to accept a prescribed therapy. Versatility is an aspect of dealing with all types of people, many kinds of diseases and injuries, and functioning in any environment where the sick are -- immaculate hospital, slum, or remote farmhouse.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Social Welfare to be sensitive to the needs and fears of others and to have the special quality of mind which in adjusting to constant association with sick bodies is sustained by a profound motivation to save life and relieve suffering. Scientific interest to keep abreast of scientific and medical progress. People and Communication of Ideas to translate technical terminology to terms patient can understand. Abstract, Creative in analyzing all factors in a patient's condition, synthesizing a diagnosis, and planning therapy. Things and Objects for many in adapting to instrumentation such as cardiac monitors and pacemakers, brain scanners, heart and lung machines, artificial kidneys, etc. Prestige deriving from status incentive of trusted position in community and feeling that job is one of world's most important.

NURSING (REGISTERED). Work, training, and leisure pursuits concerned with administering nursing care to the ill or injured. (Nursing, which requires licensing or registration, includes nursing administration and instruction, public health, industrial, private duty, and surgical nursing.)

Explore DOT OGA: 075 Registered Nurses

Related Career Possibilities: 04 Occupations in Life Sciences; 077 Dieticians; 078 Occupations in Medical and Dental Technology; 079 Occupations in Medicine and Health, n.e.c.; 094 Occupations in Education of the Handicapped; 096 Home Economists; 129 Occupations in Religion and Theology, n.e.c.; 195 Occupations in Social and Welfare Work; 237 Receptionists and Information Clerks; 307 Nursemaids; 331 Manicurists; 332 Hairdressers and Cosmetologists; 334 Masseurs and Related Occupations; 338 Embalmers and Related; 354 Unlicensed Midwives and Practical Nurses; 355 Attendants, Hospitals, Morgues, and Related Occupations; 356 Occupations in Animal Care; 352 Hostesses and Stewards (airplane, ship, etc.)

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

DEGREES: R.N., Registered Nurse, always required. Many jobs require a B.S., Bachelor of Science, degree and some, M.N., Master of Nursing.

RELATED COURSE AREAS: Anatomy, Bacteriology, Biology, Chemistry and Biochemistry, Food, General Science, Health, Medical Records, Microbiology, Nutrition, Physics, Physiology, Psychology, Sociology, Basic Nursing curriculum which consists of classroom and bedside attendance at clinics, observation in wards and out-patient departments, and supervised practice throughout all hospital departments.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): A variety of roles are possible for the nurse which range from care of the gravely ill in the hospital or home to the ambulatory out-patient coming to the clinic or physician's office. It has been observed by sociologists that the role conceptions differ between degree and diploma nurses. Degree nurses tend to identify towards the profession of nursing primarily whereas diploma nurses tend to identify strongly with the hospital bureaucracy. The nursing candidate needs to be aware in advance that whereas in professional school much emphasis is placed on the acquisition of knowledge and decision making, nursing in an institutional setting places heavy emphasis on adequate record-keeping and the adherence to administrative routine and elaborate rules and sanctions. Tolerance for unpleasant sights, sounds, and odors. Ability to analytically observe patient reactions and symptoms in order to recognize danger signals and know when to call PHYSICIAN. Sensitivity to patient's psychological attitude toward his illness. Capacity for carrying out instructions exactly. Absolute trustworthiness. Immaculate appearance.

RELATED LEISURE PURSUITS: Animal care, child care, club work dealing with home and community hygiene. First-aid work, home nursing. Microscopy. Participation in rehabilitation and recreational activities. Volunteer nurse aide work. Volunteer Red Cross work. Interest in life sciences as demonstrated by reading, science club activity in school, lectures attended, and the like.

ILLUSTRATIVE TEMPERAMENT ROLES: A people orientation to function successfully in contacts with the public, physicians, and other medical workers, but most importantly, to acquire the social skills needed to deal with patients in all stages of illness and in their most difficult situations. Self-Controlled to perform adequately under stress in emergency situations such as giving artificial respiration, setting up oxygen tents, etc., when performance must not be affected by urgency of task AND in controlling own reactions in stress-producing situations such as attending dying patients. Rigorous in administering correct dosages of medicine, taking and recording standard tests (temperature, blood pressure, etc.), and in controlling various types of equipment. Adaptability to Specific Instructions to adjust to discipline and in attitude towards authority. Must have capacity for carrying out instructions exactly and is expected to be unquestioning in attitude towards rules and regulations. Simultaneously, must have the capacity for dominance in situations such as supervising other medical workers and in maintaining patients on appropriate schedules of treatment, often in the face of resistance, even struggle, on their part.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Social Welfare in spirit of service and sincere interest in all kinds and classes of people, and in endeavors to alleviate the suffering and distress of gravely ill or dying patients. Scientific to adjust to work which requires the application of scientific knowledge and methods to problems of patient care.

MEDICAL TECHNICIANS AND ASSISTANTS. Work, training, and leisure pursuits which involve technical supporting services to professional medical personnel.

Explore DOT OGA's: 078 Occupations in Medical and Dental Technology (Direct Patient Care);
079 Occupations in Medicine and Health, n.e.c.

Related Career Possibilities: 022 Occupations in Chemistry (Technicians); 029 Occupations in Mathematics and Physical Sciences, n.e.c.; 057 Registered Nurses; 074 Pharmacists; 077 Dieticians; 079 Occupations in Medicine and Health, n.e.c.; 096 Home Economists and Farm Advisers; 332 Cosmetologists; 338 Embalmers and Related; 339 Barbering, Cosmetology, and Related Services

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Biology, Chemistry, Medical Technology, Dental Hygiene, Physical Therapy, Radiologic Technology, Occupational Therapy. Many technical supporting occupations in medical services require licensing. Licensing is not required in occupations such as dental and physician's assistants who perform some types of medical assisting to physicians in conjunction with secretarial, administrative, and accounting duties. Specialized training programs are widely established in hospitals, colleges, and special schools for medical support types of jobs. These range in length from three to six months for the Electrocardiograph Technician and the Electroencephalograph Technician to four-year bachelor's degree programs and graduate programs for some types of occupations such as physical therapy and occupational therapy. Training programs for these types of occupations vary in different parts of the country. Occupations such as dental assistant and physician's assistant are either learned on-the-job or by attending special training programs set up for such jobs. Typing, bookkeeping, and other commercial courses are also useful for these.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): For persons who are interested in medicine and health but do not have sufficient aptitude or time resources to acquire professional preparation, these are the type of occupations which offer them opportunity. Nearly all the jobs require the utmost accuracy and carefulness, ability to master a considerable amount of scientific and technical subject matter, deftness in handling medical equipment, and a sympathetic attitude and helpful manner towards people. These people work for the most part in a highly structured hierarchical setting and must be able to adapt well to "team" work. This type of technician occupation differs from those usually associated with life science in that they work chiefly in contact with patients whereas the life science technicians work chiefly in the laboratory.

RELATED LEISURE PURSUITS: Member of health, nutrition, chemistry, or similar clubs. Raising experimental animals. Repairing laboratory apparatus. Carrying out high school projects demonstrating principles in chemistry or biology. Courses in first aid. Part-time or full summer employment in a hospital or clinic or hospital laboratory. Work as a nurse's aide, orderly, or hospital clerk. Medical reading interests.

ILLUSTRATIVE TEMPERAMENT ROLES: Rigorous in avoidance of errors at all costs. One oversight of even a minor detail can be a life-endangering matter for a patient. Objective in adhering strictly to established procedures in patient care and in the operation and maintenance of medical equipment. Self-controlled to maintain standard performance under all kinds of trying work situations, e.g., in recognizing and promptly calling assistance in critical situations such as when the patient has a convulsive seizure during a test OR when speed with which accomplishes a treatment or test may make the difference between life and death of a patient. Gregarious as the work involves close and constant contact with people. The worker requires the ability to relate to people in a friendly manner, e.g., making patient comfortable and relaxed when medical equipment is being used, as in attaching electrodes to the patient's head to obtain tracings of electrical impulses from the brain.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Social Welfare to have devotion and interest in serving mankind and Scientific interest, particularly in relation to medical science. Working with Machines, Processes, Techniques in applying patient therapy techniques such as exercise and massage and various applications of heat, water, light, and electricity AND in operation of medical equipment used directly on patient (in contrast to medical laboratory work). Routine, Concrete Organized to maintain strict attention to many routine, but critical details.

PHARMACY. Work, training, and leisure pursuits which involve the compounding and dispensing of medications.

Explore DOT OGA: 074 Pharmacists

Related Career Possibilities: 077 Dietitians; 079 Occupations in Medicine and Health, n.e.c.; 022 Occupations in Chemistry

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Graduates of a five-year pharmacy course are granted the degree of Bachelor of Science and six-year course graduates are granted the degree of Doctor of Pharmacy. Tests for aptitude for pharmacy are frequently required by the pharmacy schools. Besides graduation from an accredited school of pharmacy, an internship or apprenticeship is required. There are strict laws in all states about licensing and practice.

RELATED COURSE AREAS: High school courses in English, mathematics, history, government, chemistry, biology, and physics, with laboratory courses. Courses: Hospital Pharmacy, Industrial Pharmacy, Pharmaceutical Chemistry, Pharmacology, Physical and Theoretical Pharmacy.

RELATED LEISURE PURSUITS: Activities which show an interest in the health problems of people and the community, especially when coupled with a strong science interest, especially chemistry. Science activities - reading, lectures, member in science clubs and amateur scientific research; e.g., investigating chemistry problems such as analyzing drinking water for contamination, animal metabolism, bacterial resistance to antibiotics. Participating in community health activities such as first aid, Red Cross life-saving, and hygiene. Reading of diseases, causes, and treatments.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Any pharmacy open to the public must have a registered pharmacist on duty at all times. The pharmacist must be good at detail and willing to check and then doublecheck his own work. He assumes responsibility for human life and is entrusted with the storage and distribution of dangerous and habit-forming drugs. He must be absolutely scrupulous in handling and dispensing them. He should be interested in economics and management and have the ability to keep good records in accordance with legal regulations. He must be willing to meet and give service to the public under all circumstances. He is expected to be always friendly, courteous, immaculate, and well groomed.

The prescription pharmacist working in the community setting compounds and dispenses medicines and preparations as directed by prescriptions written by licensed physicians, dentists, and veterinarians. The hospital pharmacist works closely with the medical staff in a hospital and acts as consultant on drug problems, compounds prescriptions, and purchases hospital supplies. In industrial pharmacy, the pharmacist works with the manufacturers and wholesalers of drugs. Other pharmacists are employed in government pharmacies or teach and do research in universities.

ILLUSTRATIVE TEMPERAMENT ROLES: Rigorous in care with which medications are compounded, in the measuring of ingredients, perhaps in quantities of one-thousandth of an ounce. There can be no mistake - a person's life may depend on it. It is said that "accuracy, orderliness, and cleanliness must be as natural to the PHARMACIST as breathing." His need to be careful cannot be overemphasized. Versatile in that pharmacy is one of the most varied of the health professions, involving scientific work, public contact roles, and an appreciation of both service and business values. Dominant, especially for the community pharmacist who owns and manages his own business. Gregarious - the pharmacist is approached daily by patrons who ask about everything from causes of pains and aches to community health facilities, requiring that he be an "answer man" of the highest caliber. Self-Controlled to maintain standards under all circumstances -- there is no leeway for the slighest deviation in performance. Objective in that judgments are always on the basis of measurable, verifiable criteria -- the prescriptions written by licensed Physicians, Dentists, and Veterinarians.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in willingness to meet and give service to the public under all circumstances. The success of the owner of a pharmacy will in large part depend on the ethics, tact, and good judgment which he displays in his relations with the public. Social Welfare as the pharmacist functions in what has been called "the community center for information on topics related to health" - the pharmacy. He does not diagnose or prescribe, but he offers guidance to the many people who bring their problems to the pharmacy. He can tell them where to to for the help they seek - or make them aware of the fact that they need help. Scientific - basically the pharmacist is a specialist in the science of drugs. Prestige from recognition by community of contribution made and from being member of respected profession.

MORTICIAN SERVICE. Work, training, and leisure pursuits concerned with caring for the bodies of deceased persons and arranging the course and conduct of their funerals.

Explore DOT OGA's: 187.168 Director Funeral, Mortician, Undertaker; 338 Embalmer

Related Career Possibilities: 07 Occupations in Medicine and Health; 33 Barbering, Cosmetology, and Related Service Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: To be admitted to one of the funeral service colleges, the applicant must have completed high school. Some states require that the candidate take one or two years of liberal arts college before he may obtain a license to practice. Biology, chemistry, English, and public speaking are desirable high school courses. All states require resident training, also called internship or apprenticeship. The length of training varies from half a year to three years depending upon the state. Generally, students in a nine-month embalming curriculum actively participate in the arterial and cavity embalming of ten dead human bodies and students in a twelve-month curriculum participate in fourteen.

Courses: Basic Sciences: Anatomy, including Embryology, Dissection, Histology, Physiology; Bacteriology; Chemistry, including Organic, Inorganic, Physiological, Toxicology; Hygiene and Public Health, Pathology; Mortuary Arts and Sciences: Embalming, Restorative Art. Related subjects are: Mortuary Law, Mortuary Management, and Probate Law.

State examinations are separate for embalmers and for funeral directors. Frequently the same person qualifies for both embalmer and funeral director as in many job situations he may do both jobs. Some states require a funeral director to be a licensed embalmer.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The professional literature stresses deep interest in the work as a necessary prerequisite, flatly stating that there is no adaptation to the work without it. It is a field of work which is frequently "inherited," especially in smaller communities in which the business passes from father to son. The promotional lines for this field are usually indicated as assistant embalmer to embalmer to funeral director-embalmer, assistant funeral director, to manager or business partner. There are opportunities for persons with embalmer training in related fields: salesman for embalming chemical concern or casket or funeral garment company, writing for professional journals, or in the pathological departments of medical schools.

The role projection of people in this field varies greatly according to the nature of the establishment. Employees of the mass-mortuary situation are severely categorized in role and are trained to assume a standardized demeanor. Their relationship to the survivors is a buyer-seller type.

Employees of the "local" funeral establishment conceive of the dead and their relation to the survivors in social and personal terms. The personality of the funeral director is an important factor in this type of establishment. "If you don't have the kind of personality that will permit you to give comfort and sincere sympathy to the people, you just don't stay in the game," one funeral director has remarked.

This field of work is seen by sociologists as involving considerable role conflict. The funeral director is identified with the sacred aspects of the funeral, yet he also functions as a businessman and solicits patronage by advertising. A role conflict between the funeral director and the clergyman is possible. Some functions performed by the clergy and by funeral directors overlap. These are in the area which involves giving sympathy and emotional support to the bereaved and planning the course and conduct of the funeral.

Some aspects of the work would rule out its acceptability to some people. Hours are long and irregular - always uncertain. There is exposure to all kinds of weather under all possible conditions. The work can be overridingly distasteful to many because of the handling of dead bodies, including those that have been defaced and mutilated by accident or revoltingly ravaged by disease.

One advantage of the work is that expense of training is comparatively low. Another is the stability of the work, in that it is not subject to fluctuation with economic cycles.

People in the work have expressed the rewarding aspects in terms such as these: "lessening people's grief," "the opportunity to render a high type of essential service," "comforting the living," and "a social contribution to the community." Other expressions have related to "being own boss" (for funeral director) and variety in work.

RELATED LEISURE PURSUITS: Participating in community activities such as First Aid, Red Cross life-saving, or managing roles in connection with church, club, or other group. Doing personal tasks for others. Studying art of makeup. Science hobbies, e.g., life science activities such as performing dissections and preparing anatomical specimens.

ILLUSTRATIVE TEMPERAMENT ROLES: The combination FUNERAL DIRECTOR-EMBALMER requires versatility to function both in the technical sense of the EMBALMER and in the social role of the FUNERAL DIRECTOR. The EMBALMER in the mass-mortuary organization, however, may need to adapt to repetitive work in being restricted to routine embalming. The FUNERAL DIRECTOR is involved in organizing and supervising the execution of numerous details. He must be able to assume a dominant role. Gregarious to meet people and win their confidence. Influencing for the FUNERAL DIRECTOR in his dealing with the public. Self-Controlled to maintain steadiness of performance in obnoxious situations such as handling badly decomposed bodies of persons found dead, blackened and cooked bodies of fire victims, and assembling the scattered about pieces of accident victims. The FUNERAL DIRECTOR must be able to deal in a calming manner with emotionally distraught survivors of the dead.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact to deal with the public. Social Welfare to give sympathy and emotional support to the bereaved. Prestige for the "local" funeral director, to whom the funeral is a family and community event to be handled with dignity and elegance. People and Communication of Ideas in arranging details of funeral, interviewing family to obtain information on deceased, arranging for services and floral displays, and publishing death notices. Scientific to master embalming training. Abstract, Creative in the sense of form required of the EMBALMER to restore a natural appearance to features of deceased damaged by accident and disease and for the FUNERAL DIRECTOR in planning the course and conduct of a funeral in which he strives for effects of dignity, solemnity, and beauty through the arrangement and sequencing of the ceremonial forms which the family selects for the funeral rites.

BASIC VOCATIONAL DIRECTION

THE SCIENCES

Mathematics and Logical Systems
Behavioral Science (Psychology, Sociology, etc.)
Life Science (Biological, Agricultural, Health)
Earth and Atmospheric Science
Astronomy and Space Science
Physical Science (Physics, Chemistry, etc.)
Life Science Technicians
Physical Science Technicians

THE SCIENCES (GENERAL FIELD DESCRIPTION)

The question, "What is science?" is answered variously in the current technological civilization which is so much the product of science. The nature of science is not always understood by the nonscientist. It is popularly believed to be the pursuit of truth and fact, but science is not concerned with ultimate truth, only with those domains of truth which can be based on testable statements. It does not claim absolute truth, being perpetually revisionary and disruptive of the status quo. It contrasts sharply with the artistic endeavor in that it strives toward a minimum of ad hoc assumptions.

The scientist's basic end is to generate universal concepts and comprehensive hypotheses that give new meaning to the universe. To accomplish this, he "atomizes" it, i.e., takes apart and measures nature in its minutest parts, but this he does to explore nature's deeper interrelationships and unities -- to uncover the beautiful organization of the universe as a whole. Analysis is a step to synthesis. As much as any man, the scientist bases his work on faith--faith that the chaos of reality is grounded on orderly law and underlying unity. This he seeks to learn in the scientific laboratory, which may be many things in many places: the unbelievably complex cyclotron, a puddle of rainwater, the light of the sun, or the sun itself.

Science whose subject matter derives from experience and which involves the pursuit of knowledge by observation and experiment, making use of inductive reasoning, is known as <u>empirical</u> science. This is in contrast to science such as mathematics which pursues only <u>deductive</u> knowledge, i.e., based on logical consistency without reference to external experience. Physical science is empirical in that its subject matter derives from experience and it pursues knowledge by observation and experiment. It involves both inductive and deductive reasoning. The principle methods of scientific investigation are termed <u>descriptive</u>, <u>experimental</u>, and <u>statistical</u>.

Science may be viewed as <u>exact</u> or <u>descriptive</u>. <u>Exact</u> refers to the extent to which reproducable experiments and mathematical procedures may be used to fit the data. <u>Descriptive</u> refers to scientific knowledge which is the product of naturalistic observation. All sciences involve both exact and descriptive elements. Sciences evolve from the descriptive to the exact, but the data of some sciences, e.g., geology, are less amenable to exact procedures than others, e.g., physics. Science in its attempt to communicate the scientific constructs it creates to explain observations makes extensive use of metaphor, i.e., the scientific "model."

Scientific knowledge depends upon a complex interplay between observation and theory. The work of the individual scientist may be: (1) <u>theoretical</u>, i.e., aimed at innovating new concepts to explain the meaning of observations and experiments. In this case, it is concerned primarily with knowledge as such and is not directed towards finding the best solution to practical problems, although the knowledge acquired may later become of great practical value and importance; (2) <u>experimental</u> or <u>observational</u> involving chiefly laboratory or field analysis to collect observations in order to verify data or test hypotheses; or (3) <u>applied</u> aimed mainly at the solution of immediate practical problems on the basis of specific scientific and theoretical knowledge. Applied science includes the clinician, insofar as the clinician is to be termed a scientist. In physical science, the applied scientist and the engineer may be difficult to distinguish. The scientist job very often does not exist purely as one of 1, 2, or 3 above, but represents some combination. There are, in addition, the various types of science technicians who support scientists in various ways.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The scientists show increasing concern that the public image of the scientist be seen and understood from their point of view. The U. S. Science Exhibit at Seattle World's Fair introduced science to the visitor with these words: "Science is essentially an artistic and philosophical enterprise, carried on for its own sake. . . . His (the scientist's) pleasures are those of any artist. High on the list of prerequisites for being a scientist is the quality that defines the rich human being: his ability and his desire to reach out with his mind and his imagination to something outside himself."

All of the following are said to characterize the scientist: Strong curiosity drives. Desire to find out what no one has learned before. Critical and inquiring mind. Research zeal. Ability to set up a problem, find a tentative solution, and test it. Capacity to think in terms of abstractions, generalizations, analogies, formulas, and logical sequences.

In theoretical work, the emphasis is upon mentally manipulating symbols and abstractions; in experimental and applied, emphasis is often upon reorganizing and recombining visual and other sensory constructs. For basic science, especially, capacity to be deeply committed to work, to apply the concentration and emotional energy which make possible breakthroughs to new knowledge. In natural science, particularly, firm intuitions of the physical world which are not dependent upon symbolic skills, displayed in such things as a grasp of the earth's orientation in space; sense of the behavior of light as manifested in shadows, mirror reflections and the like; ordinary behavior of water, air, and all kinds of commonplace events in the world around. In social and behavioral sciences, strong motivation to understand and investigate social phenomena - man, his behavior, existence, society, culture.

Stress may result from the fiercely competitive atmosphere which prevails in much of science today with more and more pressure for scientific achievement early in the scientific career. The scientific researcher may feel stress from the sustained and diligent effort which is necessary when working towards distant goals and hazardous success.

For many in scientific work, the work itself is the great adventure and its own reward. In relation to creative science, Jerome B. Wiesner has contrasted it with artistic creativity. Beyond having intuitive appeal and esthetic richness, as does art, creative science must be productive and logically relatable in quantitative terms to pre-existing scientific knowledge. He describes the scientific research process as "relatively loose, informal, and personal, having little in common with the highly structured, logical, and formal public descriptions of the results. It seems clear that it is this private, relatively unstructured, and perhaps only partly conscious process that results in the creations of new ideas and insights. Thus, although analogy and metaphor are techniques definitely proscribed for formal reasoning, they may turn out to be dominant in the intuitive, sometimes illogical and initially random process of scanning and searching for new connections and clues."

Scientific work, especially theoretical, may involve the brilliant single mind who does and must follow his own ideas. Many scientific jobs are of a team nature where the interplay of many minds produces the final scientific achievement.

As modern science proliferates into increasingly narrow specialist jobs, concurrently interdisciplinary jobs are arising which require broad individuals equipped with a profound understanding of the total body of science and able to think in various fields of knowledge, including the humanistic, philosophical, artistic, and ethical.

RELATED COURSES: Science and mathematics courses particularly.

RELATED LEISURE PURSUITS: Interest in social or physical phenomena demonstrated in self-initiated projects requiring intellectual, mechanical, or scientific activities -- especially when in the course of such pursuits, does not take the beaten course, but successfully tries out daring and unusual ideas. Science Search Award winners such as the Westinghouse competitions. Receipt of scholarships and fellowships. Membership in honorary societies; Junior Academy of Science; Future Scientists of America; High School science club activities; designing experiments for Science Fair. Scientific collecting. Attending scientific lectures and demonstrations. Reading serious magazines. Liking for discussion-type activities. Tendency to acquire information and become well informed. Often a persistent interest in science displayed early in life. Ann Roe's well accepted study of successful scientists established certain factors as generally common to them: an addiction to reading and study firmly established at an early age; early dependence upon personal resources in problem solving and much pursuit on their own about things which aroused their curiosity; an intense drive that generated concentrated, persistent, time-ignoring efforts in their studies and work.

ILLUSTRATIVE TEMPERAMENT ROLES: Objective in using closely reasoned logic to test every step of the way in arriving at conclusions, in the need to be self-correcting to avoid faulty judgments, in taking facts as they come out regardless of personal stake in outcome, and in capacity for detachment from own theories and ideas in order to put them to impartial test. The capacity to be valuative is basic to the inductive reasoning involved in arriving at hypotheses to explain observations. Facts can be observed in different ways and hypotheses cannot be constructed by rule but must depend upon the scientist's capacity to choose among alternatives, to make value judgments. Rigorous in placing high value upon accurate observation, in maintaining rigid control of variables in scientific experimentation. Dominant in need to initiate and follow up own ideas, to think things out for self, to be independent, have autonomy, and be self-directed in work.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Scientific in curiosity about nature, in being deeply absorbed in trying to understand phenomena, in asking questions as to "why," and in thinking uppossible answers. Abstract, Creative in exercise of an esthetic sense of unity which is able to derive order and pattern from the workings of nature, in having an eye to see relationships whereby new scientific laws may be posited AND in conceiving hypotheses on the basis of extrapolation, i.e., projecting into the unknown by inference from the known. Many scientific discoveries come from sheer speculation and imagination. Prestige in that the scientist's ego involvement in his work may be very great and the work frequently affords unusual opportunity for achievement and recognition.

MATHEMATICS AND LOGICAL SYSTEMS. Work, training, and leisure pursuits concerned with developing rational thought systems, such as mathematics and symbolic logic. These systems make it possible to establish orderly relations among events and to infer that which cannot be observed. Mathematics is frequently misunderstood to be only a system of useful rules by which reliable reasoning about calculation, measurement, and shape may be carried out. This is only one aspect of what might more properly be called the science of abstract deductive thinking.

Explore DOT OGA's: 020 Occupations in Mathematics; 029 Occupations in Mathematics and Physical Sciences, n.e.c.

Related Career Possibilities: 00 and 01 Architecture and Engineering; 02 Mathematics and Physical Sciences

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Mathematics, Statistics, Systems and Communications Science.

RELATED COURSE AREAS: Abstract Spaces; Analogue Systems, Coding and Programming; Analysis of Variance; Analytic Probability Theory; Analytical Statistics; Applications of Logic; Basic Mathematics; Boolian Algebra; Calculus; Cryptography; Decision Theory; Design and Analysis of Experiments; Differential Equations; Digital Computers, Coding and Programming; Digital Computers, Logic and Design; Dynamic Programming; Euclidean Geometry; Experimental Statistics; Factor Analysis; Finite Geometries; Formal and Symbolic Logic; Game Theory; High Speed Computers; Hypothesis Formation; Index Numbers; Infinite Series; Information and Communication Theory; Intuitionism; Inventory; Limit Theorems, Time Series; Linear Algebra and Matrix Theory; Linear Equations; Matrices; Linear Programming; Logic and Scientific Method; Logistics; Mathematical Statistics; Memory Systems; Multivariate Analysis; Non-Euclidean Geometries; Non-Parametric Methods; Number Theory; Numerical Mathematical Analysis; Operational Calculus; Operations Research; Point-Set Topology; Polyomials; Probability; Programming; Riemannian Geometry; Sampling Techniques; Sequential Analysis; Set Theory; Statistical Inference; Statistics; Survey Methods including Forms Design, Data Collection and Data Processing; System Analysis; System Design; Theory of Functions; Theory of Games; Theory of Groups; Theory of Sampling; Theory of Statistical Inference; Time Series Analysis; Topology; Weapons Systems Evaluation.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Mathematicians are believed to possess extraordinary memory and capacity for abstract thinking, intellectual curiosity, superior vocabulary, good sense of space and time, exceptional capacity for concentration, and skill in following complex sequences.

Basic or "pure" mathematics is judged to be nearer to art than to science, in that the pure mathematician works from esthetic emotion as does the artist, and his product is achieved not so much by conscious calculation as by "thinking aside." As with creative art, his criteria of

success are almost entirely esthetic, deriving from his own sense of harmony and beauty. He is not concerned with explaining the physical world, but with the well ordered whole of his system, which he sees, as the artist sees his work, as having an existence of its own, not necessarily reflecting the real world. An example of pure mathematics is Reimmann's non-Euclidean geometry which had no physical application for over fifty years until Einstein put it to use in his general relativity theory. Applied mathematicians <u>are</u> preoccupied with the real world and with developing mathematical models to represent it. They are closely akin to empirical scientists and indeed must have specific knowledge of the science or technology whose problems they seek to solve mathematically.

RELATED LEISURE PURSUITS: Consider those listed for other scientific pursuits. In Science Clubs, Fairs, etc., the student who may demonstrate his questioning, imaginative mind by fitting together convex congruent polygons to research a problem in topology OR the inventive entrant who develops a mathematical formula "more trustworthy than a ruler" to arrive at the average diameter of grains of sands OR the curious, precise mind, empirically verifying the working of probability law by painstakingly checking hundreds of items, e.g., chance pairing of red beans in a bowl from an equal mixture of red and white beans. Devising and solving mathematical puzzles. From junk or war surplus parts, constructing homemade mathematical robots which can exercise choice, signal when in trouble, etc. Buying kits and games which demonstrate mathematical reasoning processes. Playing chess. Sometimes an interest in other systems of strict esthetic order, such as music.

ILLUSTRATIVE TEMPERAMENT ROLES: In their pursuits, these people must play <u>dominant</u> roles in activities such as the STATISTICIAN designing and directing a government census OR a THEORETICAL MATHEMATICIAN formulating an entire body of mathematical law. They are <u>rigorous</u> in activities such as the PROGRAMMER breaking down a problem into a very long chain of steps for a computer when the mistake could spoil the entire calculation OR the STATISTICIAN verifying the results of computations that are strict and complicated, requiring adaptability to tediousness and great discipline. They are <u>valuative</u> in activities such as jumping intuitively to bold conclusions, OR in choosing from among the various mathematical forms with which it is possible to express observed or experimental fact. On the other hand, they must be <u>objective</u> in using deductive reasoning to create vast thought systems which are both complete and internally consistent, each link in the chain of reasoning tested by fixed rules. According to the writings of great mathematicians, such as Von Neumann and Poincare, the MATHEMATICIAN at times approaches his work <u>subjectively</u>. He considers mathematical forms to be partly a matter of taste. Mathematical forms created are not the certain outcome of logic. Rather they are systems whose esthetic structures depend upon the personal sensibilities of the MATHEMATICIAN.

ILLUSTRATIVE INTEREST INVOLVEMENTS: The MATHEMATICIAN is <u>creative</u> in his use of free-ranging fancy to explore disorder and chance out of which to derive unexpected combinations of mathematical ideas and define hidden harmonies that lead to the discovery of mathematical laws.

<u>Prestige</u> frequently comes to MATHEMATICIANS because they are key people in advancing science and technology. The possibilities for them to achieve individual distinction and renown are great.

BEHAVIORAL SCIENCE. Work, training, and leisure pursuits requiring a knowledge of one or more sciences basically concerned with man as a self-directing, symbol-using organism - with his behavior and institutions. Data studied range from observations of the brain and nervous system, through phenomena of individual behavior and group interactions, to the social, political, and cultural experiences of the human race. This area of science aims to provide technical solutions to human problems and to evolve fundamental conceptions that increase understanding of human behavior and means of developing human potentialities.

Explore DOT OGA's: 045 Psychology; 049 Life Science, n.e.c.; 050 Economics; 051 Political Science; 052 History; 054 Sociology; 055 Anthropology; 059 Social Science, n.e.c.

Related Career Possibilities: 07 Occupations in Medicine and Health; 09 Occupations in Education

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Anthropology, Archeology, Demography, Economics, Ethnology, Etymology, Genealogy, History, Linguistics, Philology, Philosophy, Political Science, Psychology, Social Geography, Social Science, Sociology.

RELATED COURSE AREAS: Aesthetics, Animal Psychology, Apparatus Design, Behavior Disorders, Biology, Brain Functions, Comparative Psychology, Concept Formation, Criminology, Criterion Development, Cultural Anthropology, Cybernetics, Demography, Developmental Psychology, Contemporary Images of Man, Economics (all courses), Epistemology, Ethics, Ethnology, Etymology, Existential Philosophy, Experimental Design, Experimental Psychology, Factor Analysis, Feeling and Emotion, Games and Decisions, Genealogy, Gestalt Theory, Group Dynamics, High Speed Computers, History (all courses), Human Engineering, Information Theory, Job Analysis, Language and Consciousness, Learning Theory, Linguistics, Logic and Scientific Method, Mathematical Models, Metaphysics, Motivation and Performance, Occupational Information, Ontology, Operations Research, Opinion and Attitude Measurement, Personality Theory, Personnel Selection, Philology, Philosophy of Science, Physiological Psychology, Position Classification, Probability Theory, Political Science (all courses), Propaganda Analysis, Psychiatric Concepts, Psychoanalytic Theories, Psychometrics, Psychophysics, Rating Scales and Questionnaires, Role Theory, Scaling and Test Theory, Sensory Processes, Social Geography, Social Psychology, Sociology (all courses), Statistical Inference, Symbolic Processes, Test Construction and Validation, Theory of Sampling.

RELATED LEISURE PURSUITS: Pursuits which show motivation to understand and investigate social phenomena - man, his behavior, existence, society, culture. Exhibited curiosity and search for answers about the behavior of living things and the characteristics of social structures, which take the form of observations, experiments, and theories. Science Club projects dealing with social and behavioral phenomena, e.g., experimental design for teaching machine; memory-emotion relationship study; self-test procedure; perception and illusion research; depth perception in infants; history of superstitions; theory of consciousness and reasons for its existence; computer stimulation of life forms. Long-term independent surveys to collect correlation data, e.g., day of week and suicide incidence, smoking habits and type of occupation, etc. Animal experimentation - tranquilizing disturbed monkeys and dogs; studying rat's trial-and-error behavior in a maze or mice reaction to impossed stresses; rearing

birds with "artificial" mothers. Devising church or club surveys on social questions and statistically analyzing answers. Studying ancient and contemporary cultures, social customs of primitive peoples. Participating in archeological "digs," excavating and collecting artifacts, reconstructing prehistoric Indian villages. Historical, heraldic, and "family-tree" research.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Broad general knowledge of the facts, principles, and theories that express social and natural phenomena. Methodology of science: observation, instrumentation, field and laboratory experiment, statistical analysis of data, construction of models and theories. Mathematical ability in exact experimental work; literary talent for history and descriptive social science. - - - Behavioral science research does not yield the precise results of physical science. The element of life introduces complex, transitory features which are not amenable to experimental controls. The number of variables needed to understand many kinds of behavior adds to the imprecision of results. Nonetheless the behavioral sciences are increasingly involved with the rigorous concepts and methods which have been applied to physical science. In common with life science and astronomy, they depend heavily upon "natural experiment," e.g., observations that occur without intervention. The behavioral scientist must utilize both laboratory experiment and reality as it is found as a basis for formulating scientific laws that express regularities in human behavior.

ILLUSTRATIVE TEMPERAMENT ROLES: Valuative as the HISTORIAN reasoning and inferring from nonverifiable and incomplete records OR the ANTHROPOLOGIST postulating the influence of ancient civilizations upon modern culture by study of artifacts, relics, and ruins OR the STATISTICIAN, SOCIAL SCIENCE extrapolating laboratory results to explain widespread economic phenomena. Objective as the PSYCHOLOGIST subjecting hypotheses to controlled experiment to determine if they have predictive validity, e.g., a theory of how the brain selects and analyzes information from the sense organs OR the PUBLIC OPINION ANALYST using standardized rating scales to measure individual and public thought. Rigorous in carrying out experiments, meticulously controlling all variables and carefully revising judgments in the light of findings. Social interaction which takes place in carrying out behavior studies with students, patients, and other subjects, and providing consultative services requires a people oriented approach. Dominance is often involved, as for instance, the SOCIAL SCIENTIST formulating programs to alter public opinions, reactions, and behavior. Complicated problems dealt with (e.g., the growth of cities into regional complexes straddling several states) may call for a versatile turn of mind.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Scientific as the PSYCHOLOGIST investigating the mechanisms of personality development OR the CYBERNETICIST carrying out comparative studies of complex electronic computers and the human nervous system to acquire new insight into thinking processes on the basis of limited analogy involved. Abstract, Creative as the PSYCHOLOGIST, PHYSIOLOGICAL postulating new ideas to reverse firm canons of belief, e.g., a theory of regeneration of nerve cells OR the BEHAVIORAL SCIENTIST developing theoretical solutions to human factors in space flight on the basis of sensory deprivation and other investigations of organism reactions OR the POLITICAL SCIENTIST studying how principles and facts developed in the behavioral sciences can be used in solving problems of international relations and human survival OR the PHILOSOPHER originating a theory of knowledge. Prestige in that the behavioral sciences play a major role in shaping human civilization and in guiding man's destiny.

People and Communicating of Ideas as the ETHNOLOGIST studying cultural differences of societies, such as native vocabularies which describe animals, plants, colors and diseases, in order to understand how other cultures organize their perceptions. Social Welfare in shaping research goals to socially useful ends (e.g., to promote amenable relationships among groups motivated by conflicting ideologies OR to aid in the solution of economic problems in agricultural programming).

LIFE SCIENCE. Work requiring knowledge of one or more sciences which deal with the phenomena involved in living processes. The data studied encompass man in terms of his biological and cultural inheritance, the behavior of species, the dynamics of organic and cellular structures, the physical forces interacting in living matter, and the environmental factors which affect life. Phenomena on the borderline of life and non-life (e.g., macromolecules such as viruses, genes, etc.) are included. The purpose of this area of science is to provide answers to the question, "What is life?" and, in application, to promote the well-being of man through health, agricultural, nutritional, ecological, sanitation, pharmaceutical, soil conservation, and related "practical" scientific activities.

Explore D.O.T. OGA's: 040 Occupations in Agricultural Sciences; 041 Occupations in Biological Sciences; 049 Occupations in Life Sciences, n.e.c.

Related Career Possibilities: 013 Agricultural Engineering; 07 Medicine and Health; 096 Home Economists and Farm Agents; 4 Farming, Fishery, and Forestry

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Agronomy, Air Pollution, Anatomy, Animal Husbandry, Bacteriology, Biochemistry, Biology, Biophysics, Botany, Cytology, Ecology, Entomology, Fish and Wildlife, Forestry and Range Science, Genetics, Health Physics, Home Economics, Horticulture, Ichthyology, Immunology, Marine Biology, Microbiology, Nutrition, Pathology, Pharmacology, Pharmacy, Physiology, Phytopathology, Soil Conservation, Space Biology, Virology, Zoology.

RELATED COURSE AREAS: Agronomy, Anatomy, Animal Breeding, Animal Husbandry, Antibiotics, Bacteriology, Biochemistry, Cell Biology, Chemistry, Chemotherapy, Comparative Anatomy, Cytology, Dairy Husbandry, Dairy Products Technology, Dietetics, Diet Therapy, Ecology, Embryology, Endocrinology, Entomology, Enzymology, Epidemiology, Evolution, Experimental Toxicology, Food and Drug Analysis, Genetics, Health Physics, Hematology, Histology, Horticulture, Human Heredity, Hygiene, Immunology, Insecticides, Lipeds, Marine Biology, Medical Research, Medicinal Chemistry, Metabolism, Microbiology, Molecular Biology, Microscopy, Morphology, Mycology, Nucleic Acids, Nutrition, Organic Chemistry, Parasitology, Pharmacy, Physiology, Physiology of the Cell, Plant Breeding, Photosynthesis, Poultry Husbandry, Preventive Medicine, Protozoa, Psycho-Physiology of Personality, Public Health, Radiology, Serology, Soil Science, Soils, Spectroscopy, Toxicology, Veterinary Science, Virology, Zoology.

RELATED LEISURE PURSUITS: Especially those carried out with a view of answering unsolved questions about living things. Having biology or chemical lab - working with test tubes, cultures; observing minute animals with microscope; dissecting and preparing anatomical specimens. Keeping aquariums, terrariums. Observing wildlife with field glasses. Scientific gardening, crop rotation, soil improvement, reforestation projects. Growing plants under experimental conditions - altering color of light, fertilizers, etc., to gain new knowledge of growth factors. Watching TV shows on wildlife, health, medicine, etc. Nature center or fish and wildlife preservation groups. Studying visible models of animals, humans. Collecting or experimenting with: ants, algae, fish, beetles, insects, reptiles, moths, caterpillars, waterbugs. Field trips to observe native flora and fauna. Science club activities based on scientific laws relating to living systems - bee crossbreeding, developing hybrid plants, cultivating bacteria or infectious virus in lab, nutritional experiments with mice, raising rabbits or guinea pigs to explore a principle in genetics, photosynthesis experiments, etc. Bird study: Audubon Club. Licensed bird bander to study migration habits. Observing bird flyways and making systematic reports. Trapping birds without injury. Erecting bird feeders and houses, studying best methods to attract rare and nearly extinct birds. Activities to establish wildlife sanctuaries.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Deep curiosity about the wonders and mysteries of life is a motivational force in all areas of life science. However, the scientific "culture" is vastly different, depending upon the area of specialization within life science. Much applied work is intensely practical and limited to very specific economic purposes. On the other extreme, life science becomes theoretical, speculative, with overtones of the philosophical.

The data studied in conventional biology are the most profuse and least amenable to regulatory concepts of any natural science; they are the least easily explainable to models and laws. For the ethologist, the point of view is that the important problems of living organisms can be recognized only from observations of the organism responding actively to its environment as an integrated unit. The person interested in the science of life, but not so much inclined towards figures, equations, and formulas as towards subject matter that is tangible and very specific, often finds these phases of life science very rewarding.

The molecular biologists concentrate on the complex organization of living material at the minutest level. They study proteins, genes, and other structures which are far removed from ordinary vision and only "seen" by means of electron equipment. In their study of such things as the atomic details of cellular structure and the replication of genetic material, these scientists depend heavily upon higher mathematics and the deductive methods of physical science, and require people whose abilities and inclinations trend in this direction.

ILLUSTRATIVE TEMPERAMENT ROLES: These scientists are objective as the VIROLOGIST explaining by deductive steps what happens when a virus enters a living cell OR a BIOPHYSICIST using spectroscopy on freshly dead bodies to confirm theories regarding chemical reactions accompanying death processes OR the ETHOLOGIST for hours, days, or weeks observing the behavior of animals in the wild, scrupulously accumulating evidence bearing the question of "innate" versus "learned" behavior patterns. They are valuative in activities such as the MEDICAL RESEARCH WORKER piecing together bits of knowledge gained through basic research which might throw light on the nature of the aging process. They are rigorous in situations such as the PHARMACOGNOSIST who after laboratory discovery of a drug, translates formulas made in milligrams to formulas that can be made commercially by the ton.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Abstract, Creative as the BIOCHEMIST collaborating in the invention of electronic computer equipment for heart and nerve research OR the PLANT PATHOLOGIST as he imagines an explanation for the origin of a plan mosaic disease before the idea can be tested by laboratory methods OR the CHEMICAL BIOLOGIST theorizing on possible chemical systems which could form a basis for life on other planets OR the GENETICIST creating a theory to explain mutation. Scientific as the PHARMACOLOGIST experimenting to achieve a better understanding of the effect of "nerve gas" upon civilian populations in chemical warfare study OR the BIOPHYSICIST using an electron microscope to visualize cellular structures down to molecules OR the BIOLOGICAL SCIENTIST investigating the means by which human beings or organs can be quick frozen and kept alive indefinitely OR the NATURALIST studying dolphin and penguin social habits OR the PIANT ECOLOGIST carrying out research on grape vines under irrigation OR the AGRICULTURAL SCIENTIST developing an improved method for ensilaging high protein pasturage, OR the ICHTHYOLOGIST studying the incidence of symbiosis in marine life. Prestige in the opportunity provided for virtuoso exploits in research which may make the scientist widely known (as the developer of a virus vaccine, technique for organ transplant, cancer control chemical, fallout protection drug, or creator of life in a test tube).

EARTH AND ATMOSPHERIC SCIENCE. Work, training, and leisure pursuits which relate to one or more sciences that deal with external or internal conditions of the earth - past and present - including its climate, oceans, and atmosphere. The data studied may be concrete and amenable to direct study, as rocks, fossils, and cloud formations, or invisible entities detectable only by instruments, as the seismic, gravitational, electrical, and magnetic phenomena associated with the earth. This area of organized knowledge aims to advance fundamental conceptions of the origin and dynamics of the earth and its relation to the universe of which it is a part. In application, it provides technical solutions to problems such as the exploitation of the earth's resources, the mapping of its surface, the prediction of its weather and magnetic disturbances which affect communications, and the developing of water supply and flood control systems.

Explore DOT OGA's: 024 Occupations in Geology; 025 Occupations in Meteorology; 029 Occupations in Mathematics and Physical Sciences, n.e.c.

Related Career Possibilities: 021 Occupations in Astronomy; 010 Mining and Petroleum Engineering; 018 Surveyors

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Geodesy, Geography, Geology, Geomorphology, Hydrology, Meteorology, Mineralogy, Oceanography, Paleontology, Petrology, Seismology, Stratigraphy, Tectonophysics, Volcanology.

RELATED COURSE AREAS: Agricultural Meteorology, Aviation Meteorology, Chemistry of Water, Climatology, Cosmic Rays, Cosmochemistry, Earth Motions, Erosion and Sedimentation, Fossils, Geochemistry, Geodetic Instrumentation, Geodetic Surveying, Geodesy, Glaciology, Gravity, Hydrology, Meteorology, Micropaleontology, Mineral Deposits, Mineralogy, Minerals and Rocks; Navigation, Geodetic Astronomy; Ocean-Bottom Processes, Oceanography, Organic Geochemistry, Paleontology; Petrography and Petrology, Sedimentary; Petroleum Deposits, Physical Geography, Precipitation, Radar Meteorology, Sea-Air Interactions, Seismic Prospecting; Seismology, Shore and Near Shore Processes; Snow, Ice and Permafrost; Soil Moisture, Stratigraphy, Surface Waters, Synoptic Waters, Synoptic Meteorology, Tectonophysics, Terrestrial Magnetism and Electricity, Tides and Currents, Volcanology, Weather Analysis and Forecasting, World Regions.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Conventional geology is largely a descriptive or qualitative science, although quantification is important in some areas. Geophysics and meteorology depend heavily upon exact mathematical procedures. Spatial ability is important for most of the jobs. Except for the area of meteorology, extensive field work involving strenuous physical activity - walking, climbing, swimming, digging, often in excessive heat or cold. Camping out, group living, "roughing it" in primitive spots are common conditions. Work is rewarding to those who like to be "on the go" to all four corners of the world - the Australian Bush, Arctic and Antarctic wastes, Arabian deserts, drilling platforms in the Gulf of Mexico, slopes of the Andes, wilds of Africa, Alaskan tundra.

RELATED LEISURE PURSUITS: Weather observing - using rain guages, wind vanes, sunshine recorders, time-lapse photography. Reading weather maps, identifying clouds. Observing meteors, sunspots, aurora, variable stars, and making systematic reports to observatories. Experiments with gravity, magnetism, etc. Setting up a Foucault pendulum to study the earth's rotation, or using metal vanes to detect its charge. Ham radio operating to receive signals from earth satellites, weather balloons, flares, airplanes, etc. Strong interest in undersea exploration and scientific progress in deep ocean research. Studying globes, atlases, geographies, and maps. Amateur seismograph to detect - from tremors that travel to own backyard - atom bomb tests, collapse of subterranean caverns, birth of new mountains, and distant earthquakes. Being an "earth" detective and looking for fossils, Indian relics, meteorites. Buying dinosaur and fossil kits. Learning to "read" the earth's history in its rocks. Collecting "cabinets" of flourescent minerals, gem stones, etc. Physics and electricity workshops. Liking for pursuits "in the open," using cots and air mattresses for sleeping on the ground. Exploring, climbing mountains. Going "caving." Science Club studies such as: control of lightning; rainmaking with dry ice; island formation; prehistoric sea life; sinking continents; world geyser census.

ILLUSTRATIVE TEMPERAMENT ROLES: It is said of GEOLOGISTS that they must be capable of "good detective work" to recognize geologic clues and reconstruct geologic history. They are valuative in this sense and in dealing with the structure of the earth which cannot be seen, only inferred. They are also objective; for example, the OCEANOGRAPHER, who after developing a model of conjectured ocean floor formations, checks the model against evidence such as magnetic observations and gravity measurements to see if they give the expected results, OR the MARINE PALEONTOLOGIST analyzing microfossils with carbon 14 to provide verification data regarding theorized climate changes in prehistoric ages. Many of the activities in this field require the worker to be rigorous in his approach to his tasks, as the PALEONTOLOGIST using pick, hammer, chisel, awl, and brush to carefully uncover fragile bones which would crumble at the least slip of the hand OR the GEOPHYSICIST who, in proving facts of the earth's weight, size, and mass, subjects experimental data to exact mathematical procedures. Dominance is involved in situations such as the MINERALOLOGIST coordinating exploratory programs and having responsibility for spending large sums of money OR the GEOPHYSICIST developing and directing water supply and flood control systems. The capacity to perform adequately when faced with the critical or unexpected is required in exploratory work which may range from descending by rope into dangerous glacier fissures, to the sea bottom in a bathysphere, by balloon to the stratosphere, by airplane into the eye of a hurricane, or by helicopter into the crater of an exploding volcano. These people must often be versatile in coping with a wide range of problems.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Scientific as the GEOMAGNETICIAN analyzing variations of the earth's magnetic field and how these might relate to sunspots, aurora, air glow, etc., OR the METEOROLOGIST studying telemetered data from weather satellites to visualize the earth's cloud cover. Abstract, Creative as the PETROLEUM GEOLOGIST discovering better ways to produce gasoline OR the CLIMATOLOGIST trying to understand interrelated phenomena of every size from global to microscopic as the basis for a theory of weather dynamics OR the ARTIST-PALEONTOLOGIST showing by means of a painted restoration how an animal of ancient time might have looked. Nature and Outdoor Life in close contact with the natural environment. People in this field must have an interest in working directly with things and objects. A high value is placed upon work by industry and the general public; hence it is rewarding in terms of Prestige.

ASTRONOMY AND SPACE SCIENCE. Work, training, and leisure pursuits which require a knowledge of one or more sciences basically concerned with phenomena which take place outside the earth and nearby space. Data studied range from local properties of the earth's ionosphere, disclosed by instrumented earth satellites, to the distant and vast, as remote galaxies detectable only by radio telescopes. The purpose of this area of scientific investigation is to find, interpret, and understand the secrets of nature as they are revealed in the laboratory of space and to extend the form of life found on earth to other planets. Such understanding and knowledge can help man to predict and control the forces of nature and his own destiny.

Explore D.O.T. OGA's: 021 Occupations in Astronomy; 029 Occupations in Mathematics and Physical Science, n.e.c.

Related Career Possibilities: 025 Occupations in Meteorology; 020 Occupations in Mathematics; 023 Occupations in Physics

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Astronomy, Astrophysics, Radio Astronomy, Space Science.

RELATED COURSE AREAS: Aerodynamics, Astronomical Photography, Astrophysics, Binary Astronomy, Celestial Mechanics, Cosmic Rays, Cosmogony, Cosmology, Design of Astronomical Instruments, Electromagnetic Waves, Extragalactic Systems, Field Theory, Galactic Structure, Mathematics through Differential Equations, Navigation and Geodetic Astronomy, Observational Astronomy, Optics, Orbit Theory, Photometry, Radio Astronomy, Solar Physics, Solar System, Space Science and Technology, Space Surveillance, Spectroscopy, Statistical Astronomy, Stellar Astronomy, Veriable Stars.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): As a primary reqirement, the urge to discover and to know - great sensitivity to the beauty of nature and the harmony of its order. Willingness to undertake tasks which may be painstaking, laborious, not always without danger, and often requiring intense mental discipline. Mathematical and spatial ability of a high order for theoretical and experimental work. Observational astronomy is less demanding mathematically but requires the ability to concentrate for long periods on routine observations and measurements. In some jobs the scientist is in the thick of things and perhaps must work in the publicity-laden atmosphere of the launch pad. But his job may be a quiet program of observing, calculating, thinking, and meditating at a mountain top observatory in almost monastic solitude. In whatever surroundings, his motivation to extend man's concepts of the universe is the same. Many space science jobs are really new jobs, based on knowledges and techniques not known until now. Astronomers are saying of their work that there is a fairy tale quality about its sudden transformation by fantastic new research tools - automated instrumentation, flying telescopes, deep space vehicles - and access to data heretofore hidden behind the earth's atmosphere. More distant and older parts of the universe are being observed, the "fourth state of matter," plasma, thought to permeate all space, has been discovered, and an exciting new geography of the planets is coming into view. All this is resulting in radically new ways of regarding the solar system, the galaxy, and the universe.

RELATED LEISURE PURSUITS: Reading: astronomy, space flight, cosmology, aeronautics. Observing: constellations, meteors, eclipses and occultations, satellite passages, veriable stars, sun spots, galaxies. Groups: Rocket societies, astronomy groups, telescope-making classes, explorer scouts, space-oriented science clubs, satellite-tracking teams. Science club projects which involve rigorous scientific methods and demonstrations

of theory, e.g., program with a spectrograph to follow the dramatic rise and fall of solar prominences, the explosion of stars, or the slow rotation of galaxies; use of telescopes every clear night to sketch seasonal changes on a planet, such as polar caps on Mars; telemetering earth satellites to detect meteor impacts; gravity experiment with Foucault pendulum; theory for apparent anisotropy of visual space. Models: gliders, ionic propulsion systems, closed ecological systems, moon landing base, Mars survival capsule. Rocketry: backing up dream of one day setting foot on the moon with good hard work to acquire sophisticated knowledge of explosive chemicals, differential calculus, and machine tools which it takes for rocketeers to do worthwhile work. Constructions: star charts; telescopes; "homemade" planetariums; orrery to illustrate planetary motion; solar furnace; clock drive for telescope; spectroscope to analyze sunlight and starlight; photoelectric equipment to photograph sky objects; cosmic ray detectors. Visiting: observatories, planetariums, rocket launch sites. Attending: star parties and meteor counts, or other outdoor observing groups - serving as guide, lecturer, or using own telescope to point out deep sky wonders. Liking to pore over ephemerides, almanacs, celestial globes, star finders, moon maps. Computing orbits and trajectories, eclipses, occultations, lifetimes of satellites. Giving papers at astronomy conventions. Editing or contributing to astronomy club papers, setting up astronomy research problems, constructing astronomy quizzes.

ILLUSTRATIVE TEMPERAMENT ROLES: Astronomers are valuative when they employ inductive reasoning to explain phenomena about which little is known, (e.g., what triggers the cataclysmic explosions which make dying stars suddenly go out in a puff) AND in the rethinking of all kinds of research problems in astronomy and space as new developments in space technology discredit long-held beliefs. They are objective in their untiring search for facts and laws, as for example the RADIO ASTRONOMER using the 21-centimeter line of neutral hydrogen as a means of proving the spiral arms of galaxies. They are rigorous in activities such as making photoelectric observations of the occultations of stars by planets to provide data for highly precise and delicate earth measurements. They exhibit the capacity to perform adequately under stress in situations such as eclipse observing from jets under rapidly varying weather conditions, requiring quick thinking and instant coordination, to make the most of the right moment as it comes. Versatility is frequently involved in many-sided problems studied. Astronomers who observe all night in an observatory, or outside, without working companionship, must be of the disposition to adapt well to working in isolation.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Scientific as the COSMOLOGIST strongly motivated to search for new evidence relating to the history and destiny of the universe in such activities as planning a systematic search for signals from intelligent life on other planets OR the SPACE SCIENTIST setting up artificial satellite instrumentation to provide new data on mysteries such as the relativity of time, landscape features on the moon's far side, or the behavior of solar wind in interplanetary space. Abstract, Creative as the ASTROPHYSICIST theorizing that intense radio sources in very distant space are produced by colliding galaxies of matter and antimatter OR the PLANETARY ASTRONOMER postulating the surface conditions on Venus and envisaging the problems involved in readying the planet for man's exploration, e.g., possibility of seeding the planet's atmosphere with algae by means of deep space probes. Prestige because of the world-wide importance of work, association of world's leading scientists with it, and the unique opportunity it provides to participate in the making of scientific history. Things and Objects in adapting to complex mechanisms such as telescopes, giant radio telescopes, rockets, etc.

PHYSICAL SCIENCE (CHEMISTRY, PHYSICS). Work, leisure, and training activities that require a knowledge of one or more sciences basically concerned with phenomena of matter and energy, space and time. The data studied are invisible forces and processes detectable only through instrument readings, and the excessively minute components of matter - molecules, atoms, and elementary particles - which no one has ever seen. The purpose of this area of science is to extend man's concept of the physical universe and his place in it, to give him insight into "what makes the world go around." In application, this knowledge enables man to harness the forces of nature to work for him.

Explore D.O.T. OGA's: 022 Occupations in Chemistry; 023 Occupations in Physics; 029 Occupations in Mathematics and Physics, n.e.c.

Related Career Possibilities: 020 Occupations in Mathematics; 021 Occupations in Astronomy; 024 Occupations in Geology; 025 Occupations in Meteorology

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Chemistry - Organic, Inorganic, Physical, Analytical, Radiation. Physics - mechanics, heat, optics, acoustics, electricity and magnetism, electronics, atomic and molecular, nuclear, physics of fluids, solid-state physics, classical theoretical, cryogenics, plasma physics, ultrasonics.

RELATED COURSE AREAS: Acoustics, Analytical Chemistry, Atomic Physics, Ballistics, Basic Mathematics, Calculus, Chemical Kinetics, Chemistry, Communication Circuits, Cosmic Rays, Cosmology, Design of Experiments, Differential Equations, Electrochemistry, Electricity, Electromagnetic Waves, Electronics, Electron Physics, Experimental Statistics, Field Theory, Gravitation, Gyroscopes, High Energy Physics, Hydrodynamics, Hypothesis Formation, Isotopes, Light and Color, Low Temperature Phenomena, Magnetism, Mechanics, Metallurgy, Molecular Structure, Nuclear Instrumentation, Nuclear Physics, Optics, Particle Physics, Photometry, Physical Chemistry, Physics, Plasma Physics, Polymers, Quantum Mechanics, Radar, Radiation Physics, Radioactivity, Radio-Chemistry, Re-Entry Physics, Relativity, Solar Physics, Solid-State Physics, Sonics and Ultrasonics, Sound, Spectroscopy, System Analysis, System Design, Tensor Analysis, Theoretical Physics, Thermodynamics, Vector Analysis, Wave Mechanics.

HIGHLIGHTS OF INTEREST: This area of science holds primacy as a "thinking activity." The data studied are the most abstract of any science in that they derive for the most part from phenomena invisible to man. Basic "facts" are often mental concepts of an inferred reality (e.g., Einstein's $e = mc^2$, the equation which revolutionalized man's concepts of space and time and pointed the way to the splitting of the atom). In explaining the appeal of this area of knowledge, the American Chemical Society says: "The fearsome roar of a forest fire or the romantic glow of candlelight, the flash of the lightening stroke or the artistry of the rainbow are the grand total of countless affairs involving atoms and molecules" and goes on to show that the same is true of the processing of fuels, the bleaching of fabrics, and the refining of metals.

This field of science is the home of persons of many types. The scientist who likes to reduce the universe to a row of figures and equations on a blackboard is most likely to be happy here. But the field is also the home of the experimentalists whose tools are cyclotrons, high-speed computers, vast electron-scattering apparatus, and atomic reactors. It is heavily populated too, with those who have business and commercial interests and apply chemistry or physics to problems of mass production and manufacturing troubleshooting.

RELATED LEISURE PURSUITS: Carrying out independent projects, especially in chemistry and physics -- conducting experiments not tried before. Hobbies which involve beginning with a set of observations and clearly stated questions: from these constructing theories and devising experiments to test the worth of the tentative guesses. For example, Science Club entries demonstrating scientific principles --

a device to show how the laws of thermodynamics, entropy, etc., operate
theoretical paper on baffling physical phenomena which might account for spook lights
a cloud chamber built from junk materials to trap fundamental particles so that their formation and disintegration may be observed

Spare-time projects such as: Measuring wave lengths of different colors, radioactivity of various ores, charge of a single electron. Preparing chemical compounds. Extracting natural dyes or perfumes. Testing drinking water. Devising a schematic diagram to illustrate the moon's motion. Designing: heat engines, solar furnaces, precision wind tunnels, high flying kites. Building: fuel cells, ozone generators, homemade atom smashers to learn more about the structure of matter. Kits: color spectroscopes, light polarizers, radiation detection. Workshops: electronics, physics, chemistry. Touring scientific facilities.

ILLUSTRATIVE TEMPERAMENT ROLES: Objectivity is fundamental in these activities in that the pursuits are greatly concerned with explaining by deductive steps what goes on in nature and much stress is placed upon proving the worth of concepts experimentally. Success always depends upon the affirmative to the question, "Does it yield verifiable results?"

The PHYSICAL SCIENTIST, however, is also involved in the making of value judgments. As an example, the PHYSICIST after studying alternative schools of thought for which there is no experimental proof either way (e.g., is gravity a geometric phenomenon or does it involve the radiational transfer or energy?) must make a personally slanted choice of the school he prefers to accept. These scientists must always be rigorous in their adherence to standards, as the CHEMIST meticulously designing his experiments with the aim of securing invarient results OR paying strict attention to every experimental detail in order that no clue needed for the successful solution of the problem will be missed.

Variable temperament involvements include dominance in situations such as the PHYSICIST formulating and directing advanced study of intercontinental ballistic missile guidance controls OR the INDUSTRIAL CHEMIST making company decisions or putting into effect the results of scientific findings. Self-control is involved when dealing with critically reacting chemicals or working around nuclear processes in that quick and logical thinking is required should an emergency arise.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Scientific as the NUCLEAR PHYSICIST analyzing high-energy plasmas in the ionosphere and beyond to detect nuclear detonations or the CHEMIST analyzing natural phenomena through the use of mathematical models. Abstract, Creative in envisioning the actual physical basis for previously thought impossible conceptions (e.g., the scientific possibility of gravity shielding or a photon, i.e., light-propelled, rocket). Things and Objects in the constant study of inanimate matter and forces and in instrumentation such as linear and circular particle accelerators. Prestige in that this area of science has spearheaded the advance into the new scientific age, its influence has been the most revolutionary, it has produced the most scientific immortals, and provides great opportunity for "name status" and public recognition.

LIFE SCIENCE TECHNICIANS. Technicians who work in support of life scientists and medical practitioners.

Explore DOT OGA's: 078 Occupations in Medical and Dental Technology; 040 Occupations in Agricultural Science (Technicians); 041 Occupations in Biological Science (Technicians); 049 Occupations in Life Sciences, n.e.c.; 073 Veterinarians (Technicians)

Related Career Possibilities: 022 Occupations in Chemistry (Technicians); 029 Occupations in Mathematics and Physical Sciences, n.e.c.; 074 Pharmacists; 077 Dieticians; 079 Occupations in Medicine and Health, n.e.c.; 096 Home Economists and Farm Advisers; 075 Registered Nurses; 338 Embalmers and Related; 332 Cosmetologists; 339 Barbering, Cosmetology and Related Services

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS: Biology, Chemistry, Medical Technology.

RELATED COURSES: Anatomy, Biochemistry, Biology, Biophysics, Chemical Testing, Chemistry, Cytology, Dairy Science, Food Testing, Health Physics, Hematology, Histology, Microbiology, Microscopy, Parasitology, Pathology, Pharmaceutical Chemistry, Pharmacy of Medicinal Products, Physiology, Serology, Soil Testing, Basic Mathematics.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): This field requires people who are cooperative, patient, and capable of meticulous work, which may be considered monotonous by some. At the same time, it provides opportunity for rewarding professional associations. For those interested in science, and unable to pursue extended training or with considerable, but less than exceptional, aptitude for science, this field may provide suitable opportunities for satisfying careers. All workers will need to acquire proficiency in research procedures as related to biochemistry, biology, or other life science field, and the ability to use chemicals, test tubes, and many kinds of delicate instruments. Thorough understanding of laboratory procedures and testing techniques. Good comprehension of technical verbal material. Know technical report writing. Accuracy in dealing with critical details.

RELATED LEISURE PURSUITS: Exhibiting at science fairs or carrying out high school projects demonstrating principles in chemistry or biology. Having a home biology or chemistry lab. Performing chemistry experiments. Making microscopic slides. Repairing laboratory apparatus. Raising experimental animals. Keeping scrap books on research projects. Member of health, nutrition, chemistry, or similar clubs.

ILLUSTRATIVE TEMPERAMENT ROLES: These technicians are rigorous in their painstaking handling of detail, in exactness and strict application of prescribed procedures and standards in such activities as identifying micro-organisms by microscopic examination. They are objective as the SANITARY TECHNICIAN making various tests according to formula and paying strict attention to fact findings in making recommendations OR the SEROLOGY TECHNICIAN performing microscopic tests and titrating blood samples against standard reagents OR the HEALTH PHYSICIST TECHNICIAN monitoring time and intensity of exposure of personnel working in radiation areas, basing judgment upon geiger counter readings. They are required to perform adequately under stress in situations such as the MEDICAL TECHNOLOGIST cross-matching blood of a patient awaiting transfusion, when seconds are precious and life of the patient depends on both speed and accuracy. They must be able to deal with people effectively in situations such as the HEMATOLOGY TECHNICIAN when he draws blood from the patient, and does this in a manner to put him at his ease and allay his nervousness.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Scientific in general affinity for scientific subject matter, adjustment to controlled laboratory work, and appreciation of cause and effect. Working with Machines, Processes, and Techniques in carrying out such procedures as straining tissue sections, cultivating and identifying viruses, cross-matching blood, and making chemical tests of foods, agricultural products, etc. Routine, Concrete Organized to adjust to the more routine aspects of scientific work which may involve a capacity for sustained and diligent application. Social Welfare in having an ideal of service by engaging in work which contributes to the safety, health, and comfort of mankind.

PHYSICAL SCIENCE TECHNICIANS. Technicians who work in support of physical scientists.

Explore D.O.T. OGA: 02 Occupations in Mathematics and Physical Sciences (Technicians)

Related Career Possibilities: 00 Occupations in Architecture and Engineering; 199 Misc. Professional, Technical, and Managerial Occupations, n.e.c.; 976 Darkroom Occupations, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS: Physics, Chemistry, Geology, Astronomy, Mathematics, Meteorology.

RELATED COURSES: Strong science, mathematics, and English high school background. Any college work associated with subjects mentioned under Related Majors. Specific vocational preparation for technician occupations may be obtained in various ways in two- and three-year technical institutes, junior or community colleges, armed forces training and home study training, through on-the-job training, and by obtaining a terminal B.S. degree in a physical science. Advanced technical high schools may give training sufficiently intensive to qualify for technician occupations.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Research procedures and scientific method as related to physics, chemistry, or other nonlife science. Thorough understanding of laboratory procedures and testing techniques. Use of various kinds of scientific instruments and equipment. Ability to work with precise and complex measurements. Good comprehension of technical verbal material. Accuracy in dealing with critical details. Technical report writing. The role of technician as a type of occupation is given more detailed discussion under the general section on technicians.

RELATED LEISURE PURSUITS: Consider those listed under the various sciences and under Engineers and Engineering Technicians. An emphasis upon the more tangible and practical phases of such hobbies is usually construed to relate more to technical than scientific work.

ILLUSTRATIVE TEMPERAMENT ROLES: These technicians are rigorous in performing tests, experiments, or analysis to insure validity and reliability of results. They work within a framework of premises which are handed them without leeway for questioning basic assumptions--hence requiring a mind which functions best in a situation in which the rules and limits are known, usually associated with strong objectivity inclinations.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Scientific to comprehend, and be motivated by, the technical and scientific problems with which constantly works. Working with Machines, Processes and Techniques in situations involving using or operating laboratory apparatus or instrumentation and applying techniques of laboratory procedures. Routine, Concrete Organized to adjust to the more routine aspects of scientific work and in diligent applications to detail often involved.

BASIC VOCATIONAL DIRECTION

ENGINEERING AND RELATED

Industrial Engineering
Structural Engineering
Agricultural Engineering
Mechanical Engineering
Aeronautical and Aerospace Engineering
Chemical, Metallurgical, and Ceramic Engineering
Nuclear Engineering
Electrical and Electronic Engineering
Mining and Petroleum Engineering
Engineering Technicians
Drafting
Surveying, Mapping, and Landscape Drafting
Air Flight (Piloting and Control Tower Operating)
Audio and Video Transmitting and Receiving
Technical Photography

ENGINEERING AND RELATED (GENERAL FIELD DESCRIPTION)

In answering the question, "What is engineering?", the Dean of the School of Engineering of the Massachusetts Institute of Technology, Gordon S. Brown, calls it the "organized forcing of technological change." A more traditional recent definition is that engineering "applies the concepts and discoveries of science to the practical needs of the human community, its health, prosperity, and individual fulfillment." Our present-day technological society is largely the product of the engineering of science.

The engineer's role is difficult to define. Roles range from that of the engineer-scientist to that of the engineering technician. The early training, interests, and voluntary pursuits of scientists, engineers, and associated technicians have much in common. To distinguish engineers from scientists, it might be said that whereas the scientist may work with no aim but discovery and understanding, the engineer is always oriented in the direction of purposeful action. He works toward an end of making things or making things happen. He achieves satisfaction in tangible accomplishment that everyone can see - machines, buildings, highways, production facilities.

The engineer-scientist or research designer may direct his efforts towards gaining new knowledge, but this in itself is never his final end or goal. To him knowledge is important in that it can be put to use in developing or improving products, devices, systems, processes, or constructions.

Other engineers are concerned with reducing the theoretical work of the scientist or engineer-scientist to practical form in development laboratories and in industrial establishments. These are the engineers who devise, design, and develop engineering applications very closely geared to the current market, or defense, or human needs of the society. Still other engineers are engaged in conventional engineering practice which involves great responsibility and much technical decision-making but not high innovating capacity.

More and more the engineer faces situations in which he must apply engineering knowledge in its totality, cutting across several engineering branches. Increasingly, he must collaborate with people in other disciplines: the physical, life, and behavioral sciences, and even the humanities.

As high-speed computers, deep space probing, nuclear power, solid state physics, etc., interact with traditional engineering fields, the engineer increasingly is required to have the interdisciplinary capacity to cope with change. Technical knowledge is doubling so rapidly that throughout his lifetime, he must learn anew as technology moves forward. It is said that the half-life of the 1965 Ph.D. engineer's knowledge is only ten years, with half of the knowledge he will need in the second ten years of his engineering career as yet unknow.. As succeeding technologies revolutionize and pre-empt those in which he was trained, he must have both the willingness and the flexibility to acquire new knowledge and new techniques.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: In high school, Algebra through Quadratics, Biology, Chemistry, English, Physics, Plane and Solid Geometry, Social Studies, Trigonometry, recommended. Basic engineering preparation: Chemistry, Electricity, Electrical Circuits, Engineering Drawing, Graphics, Mathematics through Differential Calculus, Mechanics, Physics, Thermodynamics.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The engineering of science requires an intellectual viewpoint extensively patterned on science. Generally, engineers must be able to: Organize ideas and think in mathematical, verbal, and symbolic terms, write concisely and logically; visualize spatially and manipulate objects mentally; achieve a physical grasp of abstract scientific ideas; and decide when they have all the facts needed to make decisions. In nuclear, chemical, and electrical areas, think in terms of invisible objects such as atoms and molecules. In design work connected with automation, space systems, data processing, bioengineering, military weapons, and other systems in which men and machines interact, expert knowledge of the strengths and weaknesses of the human body and mind. In products design, esthetic judgment. In research and developmental engineering, ability to set up pilot studies and simulate operations by the use of mathematical models. Engineers require awareness and appreciation of such factors as the tastes of people, problems of efficiency, cost considerations, and contemporary industrial practice.

RELATED LEISURE PURSUITS: See following page.

ILLUSTRATIVE TEMPERAMENT ROLES: Objectivity is fundamental to the engineer in that he requires proof of his facts and strives to marshal all possible data as a basis for his decisions; for example, the MISSILE FLIGHT ENGINEER analyzing data from tests for the purpose of preparing instrumentation specifications. Nevertheless, the engineer, and most particularly the developmental engineer, must have the capacity to take valuative approaches. He must reason by analogy to discover principles, design for the future on the basis of projections from the past, and predict performance of products not yet made. Engineers exhibit dominance in being highly independent and self-directing in their work. They often plan and control large enterprises, e.g., a SANITARY ENGINEER operating a multimillion dollar sewage disposal plant. The engineer's orientation is to exact science and he is rigorous in his use of precise terms, and adherence to rigid specifications. He is responsible for the trustworthiness of the bridge built, the reliability of the engine designed, the safety of the electrical circuits developed. The engineer must often be versatile in coordinating various kinds of knowledge and in coping with continually changing and often conflicting situations and self-controlled in situations such as the AERONAUTICAL ENGINEER's instant alerting of his faculties to solve emergency problems while test flying experimental craft. Dealing with people is involved in situations such as the AGRICULTURAL ENGINEER's conducting of seminars in agricultural methods. SALES ENGINEERS must have the capacity for influencing roles.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Scientific as the AERONAUTICAL ENGINEER making his contribution to the "state-of-the-art" by analyzing plasma wakes behind hypersonic re-entry vehicles OR the COMPUTER DESIGNER studying the application of computers to nonnumerical problems, e.g., speech recognition.

Abstract, Creative in design activities to bring into being products such as miniaturized devices for telemetering cardiac activity or techniques for the assembly of low-cost housing components; in developmental activities which require the engineer to understand society's current needs, anticipate its future needs, and visualize how the potential of science can be applied to meeting these needs; AND in research where the engineer coordinates seemingly unrelated data into purposeful forms for uses as yet unknown. Prestige as engineers often acquire national eminence.

ENGINEERS AND ENGINEERING TECHNICIANS

RELATED LEISURE PURSUITS: Note: Leisure pursuits related to scientists, engineers, and engineering technicians are similar. The intensity and originality with which the hobby is pursued, and the emphasis upon its theoretical, technological, or mechanical aspects may be more important than the kind of hobby.

Awards: Science talent search winners. Science Fair awards, etc., for exhibits and projects such as rocks and minerals collection, distillation apparatus, iron and steel reduction and refining projects, planetarium projector, atomic reactor, accelerator.

Clubs and Groups: Science Clubs and Science Fair participations. "Jet" Engineers Club, Junior Achievement Week activities in science and engineering. Amateur Astronomy and Rocket Societies. Satellite tracking and telemetering groups. Lens grinding groups. High-Fidelity group. Junior Engineering Technical Society.

Reading Interests: Aviation, Color TV, Radio and High Fidelity, Space Exploration, Electronics, Rocketry, Jet Propulsion, Atomic Power, Automation, Mechanics, Technology, and the like.

Visiting: Industrial Exhibitions, factories, scientific demonstrations and shows, e.g., auto, motorboat, aircraft, industry.

Workshops: Electrical, radio, chemical, optics, physics, photography, machine shop.

Modelmaking and Amateur Designing: Autos, airplanes, rockets, gliders, ships and boats, space ships, gasoline engines, scale model of solar system, turbo-jet engines, dams and canals, blimps, model farm, bridges and turnpikes from construction sets.

Experimentation: Aerodynamics projects. Projects investigating light, electronics, and chemical subjects. Motor building, e.g., "hot rods." Tape recording sound effects, as thunder storm, trains, machinery running, etc. Jets and rockets, e.g., rocket launchings. High flying kites. Cloud chambers to identify atomic particles. Scientific applications of photography. Precision wind tunnels to investigate forces. X-ray machines. Testing with geiger counters. Gyroscopes, pendulums, electric currents, gravity, magnetism, chemical treatment kits, flourescent minerals, fireworks, plastics, processing or agricultural products.

Mathematics: Logic games. Solving mathematics puzzles. Devising elementary computers. Using slide rules. Work with geometric shapes. Computations of orbits and trajectories.

Inventing: Mechanical gadgets, heat engines, electronic circuits, homemade atom smashers, seismographs, solar furnaces, sound systems, sundials to keep correct time.

Tangible Constructions: Recorders and amplifiers, telescopes, microscopes, electronic systems, clocks, voice transmitters, static electricity generators, calculators, electric relay calculator, TV transmitters, distillation apparatus, planetarium projector, doorbells, buzzers, burglar alarms, slide projectors, photograph enlargers, electric toys, electric test equipment, generators, dynamos, motors, clock drive for telescope, two-way intercom, gearing systems, color spectroscope, light polarizer, radiation detection devices. Experimental devices of all kinds, using erector sets and other kits and all kinds of old materials such as discarded laboratory equipment, "junk" such as scrap metal, old radio and TV tubes, tin cans, glass jars, and materials bought from surplus sales.

INDUSTRIAL ENGINEERING. Work, training, and leisure pursuits concerned mainly with industrial organization and industrial processes, involving such activities as designing products; planning procedures; devising or arranging equipment or work to eliminate wasteful or unsafe practices or increase production; installation of automated manufacturing processes; cost and quality control; time, motion, and incentive studies; and safety engineering.

Explore DOT OGA: 012 Industrial Engineering Occupations

RELATED COURSE AREAS: Automated Equipment Installation, Design and Measurement of Man-Machine Systems, Electronic Computer Data Processing, Engineering Economics, Industrial Personnel and Labor Relations, Linear Programming, Maintenance Engineering, Manufacturing Processes, Methods Analysis and Work Simplification, Operational Analysis, Organization Planning, Plant Layout and Design, Procurement and Accounting, Product Packaging, Production Planning, Quality Control, Queueing, Monte Carlo and Game Theories, Safety Engineering, Sales Engineering, Standardization Engineering, Standards and Testing of Materials, Statistical Decision Making, Statistical Engineering, Systems Design, Systems Management, Time and Motion Study, Work Measurement and Methods.

STRUCTURAL ENGINEERING (Engineers). Work, training, and leisure pursuits involving the development and execution of plans for the construction of such things as buildings, bridges, dams, ships, airports, canals and harbors, irrigation systems, tunnels, water and sewage systems, and similar; includes sanitary engineering.

STRUCTURAL ENGINEERING (Technicians). Work, training, and leisure pursuits in assisting engineers by participating in design work, and by gathering data, performing calculations, preparing drawings, writing specifications, estimating costs, scheduling construction activities, supervising construction work, or inspecting to see that work is done exactly as provided for in the blueprints and specifications.

Explore DOT OGA: 005 Civil Engineering Occupations

RELATED COURSE AREAS: Building Construction, City Planning, Construction Materials, Dynamics, Engineering Mechanics, Fluid Mechanics, Geology for Engineers, Hydraulics, Industrial Sanitation and Waste Treatment, Public Health Engineering, Reinforced Concrete Design, Site Engineering, Soil Mechanics, Statics, Strength of Materials, Structural Theory and Design, Substructures, Surveying and Mapping, Thermodynamics.

Particularly for technicians: Applied Descriptive Geometry, Asphalt Paving, Concrete Practice, Construction Materials, Cost Estimating, Drafting, Engineering Mechanics, Engineering Surveys, Fluid Mechanics, Graphic Statistics, Photogrammetry, Physical Geology, Structural Analysis, Structural Timber, Surveying, Topographical Drawing, Welding Processes.

AGRICULTURAL ENGINEERING. Work, training, and leisure pursuits involving application of the principles of engineering to the problems of agriculture. The work may merge with that of science and other branches of engineering. The distinction is to a large extent one of viewpoint and background. The agricultural engineer may specialize in research, extension work, design of farm equipment, supervision of farm construction, or management of farm products processing plants, rural electrification, soil and water conservation, or irrigation and flood control systems.

Explore DOT OGA: 013 Agricultural Engineering Occupations

RELATED COURSE AREAS: Agricultural Machines, Agricultural Power, Animal Products Technology, Contour Cultivation, Dairy Products, Drainage and Irrigation Engineering, Drainage Machinery, Farm Machinery, Farm Refrigeration, Farm Structures, Farm Utilities, Flood Control, Food Processing, Grain Elevators, Harvesting Machinery, Poultry Processing, Reclamation, Rural Electrification, Rural Water Supply and Sanitation, Site Planning, Soil Conservation, Water Conservation.

MECHANICAL ENGINEERING (Engineers). Work, training, and leisure pursuits mainly concerned with applying the principles of mechanics and thermodynamics to the design and operation of machines or devices which produce, transmit, consume, or remove energy. Typical of such machinery and equipment are internal combustion engines, steam turbines, jet and rocket engines, nuclear reactors, refrigerating and air conditioning equipment, missiles, spacecraft, marine equipment, motor vehicles, railroad equipment, and machines for specialized industries such as steel rolling mills. Also included in the associated instrumentation and the design of machine tools by which machines are manufactured and the equipping of plants or mills which require special construction to accommodate power-producing or transmitting machinery.

MECHANICAL ENGINEERING (Technicians). Work, training, and leisure pursuits in assisting engineers in design and development work by making freehand sketches and rough layouts of machinery and other equipment and parts, or performing other activities which require technical knowledge of factors such as tolerances, stresses, strains, friction, and vibration. Much of the work consists of testing experimental engines, and analyzing results. One of the better known specialties included here is that of the tool designer. The tool designer designs tools and devices for the mass production of manufactured articles. He may work from the designs of engineers or may himself originate designs.

Explore DOT OGA's: 007 Mechanical Engineering Occupations;
014 Marine Engineering Occupations

RELATED COURSE AREAS: Aero-Thermodynamics, Applied Mechanics, Automotive Engineering, Boilers and Steam Engineering, Diesels, Dynamics of Machinery, Dynamics of Naval Architecture, Engine Instrumentation, Experimental Stress Analysis, Fluid Mechanics, Fatigue of Engineering Materials, Gas Dynamics, Gas Turbines; Heating, Ventilating and Air Conditioning; Heat Power, Heat Transfer, Hull Design Hydromechanics, Internal Combustion Engines, Jet and Rocket Engines, Kinematics, Lathe and Bench Work, Lubrication Engineering, Machine Design, Machine Shop Practice, Machine Tools, Marine Engineering, Mechanical Vibrations, Naval Architecture, Nuclear Reactors, Oil and Gas Power, Optics, Ordnance and Armament, Propelling Machinery, Refrigeration, Ship Theory (Hydrodynamics), Stress Analysis, Theory of Elasticity, Theory of Mechanism, Theory of Plasticity, Theory of Pumping Machinery, Theory of Ship Structures, Thermal Power, Thermodynamics, Tool Engineering, Turbomachinery, Vehicle Testing, Vibration and Flutter, Welding Engineering. Particularly for Technicians: Applied Mechanics, Dynamics, Fuels and Combustion, Heat Power, Hydraulics, Internal Combustion Engine Theory and Practice, Kinematics, Lathe and Bench Work, Machining Processes, Mathematics through Calculus, Mechanical Design, Mechanical Drafting, Metallurgy, Sheet Metal Fundamentals, Statics; Steam Turbine Design, Construction and Operation; Strength of Materials, Vehicle Testing.

AERONAUTICAL AND AEROSPACE ENGINEERING (Engineers). Work, training, and leisure pursuits concerned with the research, design, development, testing, fabrication, operation and maintenance of aeronautical and space vehicles, manned and unmanned. Includes conventional propeller-driven planes, jet-powered aircraft, missiles, and vehicles capable of space flight and transporting living organisms in space. The purpose of the activity may be improvement of the usefulness, performance, speed, safety, and efficiency of aeronautical and space vehicles or applied research directed towards gaining more knowledge of phenomena in the atmosphere and space. This area of engineering involves many problems requiring a multi-disciplinary approach and it is related to structural, electrical and electronic, mechanical, nuclear, and mechanical engineering, as well as chemistry, physics, biology, psychology, and the technology of automated systems. There is high transferability into this field of individuals with training and experience in other engineering branches. Includes submarine propulsion systems requiring related training.

AERONAUTICAL AND AEROSPACE ENGINEERING (Technicians). Work, training, and leisure pursuits in assisting engineers in all phases of design, production, and operational aspects of aircraft and spacecraft technology. The activities may include design, flight testing, evaluation, experimental laboratory work, evaluation of experimental data for practical application, or other work which requires a technical knowledge of the principles of stress analysis, aerodynamics, structural design, flight test evaluation, guidance, and propulsion.

Explore DOT OGA: **002 Aeronautical** Engineering Occupations

RELATED COURSE AREAS: Aerodynamics, Aeroelasticity, Aerospace Ground Equipment, Aero-Thermodynamics, Aircraft Fuels, Aircraft Structures, Astronautics, Bioastronautics, Celestial Navigation and Practical Astronomy, Cyrogenics, Deceleration and Landing Systems, Drone Surveillance Systems, Energy Conversion Systems, Flight Test and Research, Flutter Vibration, Heat Transfer, Hypersonic Flight and Re-Entry, Hypersonic Propulsion, Inertial and Space Guidance, Internal Ballistics, Launch Vehicles, Lighter-than-Air Craft, Manned Space Flight Simulators, Marine and Submarine Propulsion, Meteorological Measurements, Missiles and Rocket Vehicles, Nozzle Materials; Nuclear, Electric, and Liquid Rocket Propulsion; Orbit Mechanics, Physics and Chemistry of Propellants, Physics (Theoretical, High-Temperature, Plasma, High-Energy, Solid State, Infrared, Optics, Nuclear), Propulsion Systems, Radiation Effects, Re-Entry Physics, Rocket Design, Rotary Aircraft, Satellite Communications, Servosystems, Solid Propellant Rockets, Space Biology, Space Guidance and Astro-Inertial Navigation Systems, Space and Underwater Medicine, Space Power Supplies and Rocket Systems, Space Technology, Stabilization and Attitude Control, Structural Design (Wing, Empennage, Fuselage), Supersonic Airflow, Telemetry, Thermodynamics, Trajectory Analysis, Turbojet Engines, Turbines, Upper Atmosphere Research, Weapons Integration, Wind Tunnel Design.

CHEMICAL, METALLURGICAL, AND CERAMIC ENGINEERING (Engineers). Work, training, and leisure pursuits concerned mainly with engineering applications where energy or chemical actions bring about composition changes in substances. Chemical Engineering involves the design, construction, operation, control, and improvement of equipment for carrying out chemical processes on an industrial scale. The chemical engineer may direct every step from the preliminary design of a plant and equipment to its day-by-day operation. Metallurgical Engineering involves the extraction, preparation, and alloying of metals for commercial and industrial purposes. It may be specialized in the direction of the chemical and process factors which are associated with extractive and refining operations or with the physical and mechanical properties of metals and alloys. Ceramic Engineering is concerned with raw-materials processing and the manufacture of products from clay, silicates, and other nonmetallic minerals. Such manufacturing involves the application of high or medium temperatures. Ceramic Engineers design and construct plant equipment and structures to produce ceramic materials, as well as planning production processes. Ceramics products have a wide range of applications in situations where materials must withstand inferno heats.

CHEMICAL, METALLURGICAL, AND CERAMIC ENGINEERING (Technicians). Work, training, and leisure pursuits in assisting engineers in the development, production, and utilization of chemical and ceramic products and equipment, and in processing metals and converting them into finished products. Work involves such activities as quality control, laboratory research, controlling complicated processes in production laboratories or industrial plants, conducting experiments to determine characteristics of substances, and testing materials to determine their chemical composition or physical properties.

Explore DOT OGA's: 008 Chemical Engineering Occupations; 011 Metallurgy and Metallurgical Engineering Occupations; 006 Ceramic Engineering Occupations

RELATED COURSE AREAS: Chemical - Adsorption and Absorption, Chemical Engineering Thermodynamics and Design, Chemical Separation, Colloid Chemistry, Distillations, Electrochemical Operations, Fluid and Particle Motion, Fuel Technology, Heat Transfer, High Polymers, Kinetics and Catalysis, Mass Transfer, Mechanical Separation, Nuclear Processes, Synthetic Plastics, Technology of Plastics. Metallurgical - Adaptive Metallurgy, Electrometallurgy, Extractive Metallurgy, Ferrous Metallurgy, Foundry Practice, Iron and Steel Extraction, Metal Treatment and Fabrication, Metallography, Metallurgical Considerations in Design, Metallurgy, Nonferrous Metallurgy, Physical Metallurgy, Powder Metallurgy, Transformation of Steel. Ceramic - Abrasives; Cements, Limes, Plasters; Clay Products, Earthenware and Porcelain; Enamels, Glazes and Colors; Glass, Pressed, Blow and Flat; Kilns and Furnaces, Lime Technology, Prevision Optical Glass, Protective and Refractory Coatings for Materials, Structural Clay Products.

NUCLEAR ENGINEERING (Engineers). Work, training, and leisure pursuits concerned with the release, control, and utilization of all types of energy from nuclear sources. Nuclear engineering is confined to the solution of those problems in which the unique nature of nuclear energy presents the major challenge, and it is closely associated not only with nuclear and solid state physics but also with other branches of engineering such as chemical, electrical, and mechanical. The varied activities involved in the release, control, and utilization of nuclear energy require a body of knowledge based on the three physical processes of nuclear release: fission, fusion, and radiation. The field includes the application of nuclear science to the design and development of nuclear energy systems, such as fission or fusion reactors for the controlled release of nuclear energy and the applications of radiation.

NUCLEAR ENGINEERING (Technicians). Work, training, and leisure pursuits in assisting engineers and carrying out practical applications of nuclear engineering technology in nuclear facilities and in production laboratories. Such workers typically must be able to use radiation detecting equipment when working with radioactive materials and in radiation contaminated areas, and adjust to controlling processes with remote-handling equipment and being separated from work by radiation-absorbing shields. Typical activities with which such technical work is associated are uranium milling, design and engineering of nuclear facilities, power reactor operating, radioactive waste disposal, nuclear instrument manufacturing, processing and packaging of radioisotopes, and particle accelerator manufacturing.

Explore DOT OGA: 015 Nuclear Engineering Occupations

RELATED MAJORS: Nuclear Engineering. Aeronautical, Civil, Chemical, Electrical, Mechanical, Metallurgical and Engineering Mechanics are offered with nuclear options as part of normal engineering degree.

RELATED COURSE AREAS: Atomic Physics, Ceramic Problems in Nuclear Engineering, Chemical Processing and Separation, Health Physics, Heat Conduction, Heat Convection, Heat Engines, High Energy Particles, Neutron Physics, Nuclear and Reactor Physics, Nuclear Energy Conversion, Nuclear Energy Power Plants, Nuclear Fuels and Waste, Nuclear Metallurgy, Nuclear Physics, Nuclear Power in Ship Design, Nuclear Power Plants, Nuclear Reactor Technology, Nuclear Spectroscopy, Nucleonics Instrumentation, Pile Physics, Plasma Physics, Radiation Biology, Radiation Shielding, Radiochemistry, Radioisotope Techniques, Reactor Design, Reactor Fuel Processing Plants, Reactor Materials, Reactor Stress Analysis, Servomechanisms, Solid State Physics, Thermal Radiation, Thermonuclear Theory, Waste Disposal, Wave Mechanics.

FACILITIES: Training in equipment such as - Accelerators, Automatic Cloud Chambers, Computers, Counting Equipment, Critical Reactors, Diffraction Equipment, Fast Pulsed Neutron Sources, Gamma Radiation Facilities, Ion Field Microscopes, Neutron Howitzers, Pulse Height Analyzers, Spectrometers, Subcritical Reactors, Thermonuclear Facilities.

ELECTRICAL AND ELECTRONIC ENGINEERING (Engineers). Work, training, and leisure pursuits concerned with the release, control, and utilization of all types of energy whose basis is the electron. Electrical Engineering, which is characterized by dependence upon circuits through which electrical charges move through conventional conductors, deals chiefly with the utilization of electrical energy for power, heating, wire communication, illumination, transportation, and the generation of electrical power for these purposes. In Electronic Engineering the motion of the electron is put to use to produce signals which induce action or communicate data through the propagation of electromagnetic waves. Information is picked up by means of signal-sensing devices. It is then coded in the form of changing electrical currents, transmitted and then picked up by signal-receiving devices which translate it into new signals that produce useful information or actions. Electronics is characterized by its dependence upon gases, vacuums, or "semi-conductors" as a means of electrical conduction; by its use of photoelectric cells and circuit devices such as the electron tube and transistors; and by its utilization of electromagnetic waves for nonwire transmission of signals through space.

Electronics is the basis of telemechanics, i.e., the operation of mechanisms at a distance by radio waves, e.g., commanding orbiting instruments millions of miles out in space; reproducing speech, music, or other sounds; transmitting and receiving by radio, television, and radar; charting the ocean's floor and studying the structure of the earth's interior; making possible the release and measurement of nuclear energy; telemetering to study conditions in the upper atmosphere or picking up millivolt electrical currents from the human brain; providing artificial conduction systems for crippled hearts; photographing the smallest viruses; detecting missile launches on the opposite side of the globe; and the development of so-called "thinking machines," e.g., high-speed electronic computers.

ELECTRICAL AND ELECTRONIC ENGINEERING (Technicians). Work, training, and leisure pursuits in assisting engineers and maintaining complex electrical and electronic equipment. Typical activities involved are preparing and interpreting layouts and diagrams, assisting in the design and development of experimental electronic and electrical units and circuits, testing operating characteristics of manufactured products, and participating in experimental laboratory work in the field of electrical phenomena. An important aspect of electrical and electronic technology is the maintenance in perfect working order of broadcasting stations, high speed electronic computers, air traffic control systems, defense warning and detection devices, and the like.

Explore DOT OGA: 003 Electrical Engineering Occupations

RELATED COURSE AREAS: Alternating Current Circuits and Machinery, Antenna and Microwave Design, Broadcast Engineering Technology, Communication Networks, Digital and Analog Computer Laboratory, Electric Power Generation and Transmission, Electrical Design, Electrical Energy Conversion, Electrical Measurements, Electricity and Magnetism, Electro-Acoustical Engineering, Electromagnetic Theory, Electronic Circuits and Systems, Electronic Computers, Electronic Instrumentation, Engineering Electronics, Fluid Mechanics, Fundamentals of Telephony, High-Frequency Communications, Illumination, Industrial Applications of Electricity, Industrial Electronics, Information Theory, Linear Circuits Analysis, Miniaturization, Power Networks, Principles of Television Systems, Quantum and Solid State Physics, Radar, Radio Engineering, Semi-conductors, Servomechanisms, Signal Analysis and Noise, Sound Engineering, Telemetry, Thermodynamics, Transistor Electronics, Transmission Lines, Ultra-High Frequency Technology, Vacuum Tubes and Theory, Wire Communication Systems. Particularly for Technicians: A-C Components, Antennas and Distribution Systems, Blueprint Reading and Sketching, Circuit Analysis, Communications Systems, Computer Machine Logic, Control Systems, Data Acquisition Systems, Electronic Circuits, Electronic Drawing, Electronic Measurements, Fundamentals of Electronics, Microwave Techniques, Modulation Systems, Oscilloscopes, Physics for Electronic Instrumentation, Radar, Radio, Report Writing, Semi-conductors and Transistors, Signal Genera, Sonar, Strength of Materials, System Tests and Measurements, Telemetering, Telemetering, Telephony, Television, Vacuum Tubes.

MINING, PETROLEUM, AND NATURAL GAS ENGINEERING (Engineers). Work, training, and leisure pursuits concerned mainly with the application of engineering principles (which may include metallurgical, mechanical, structural, electrical, and electronic) to the extraction of ores, coal, petroleum, natural gas, rocks, or related substances from the earth. Mining Engineering may involve "prospecting" or searching for deposits; "developing" or opening mines to cut or quarry; "operations," the extraction of the ore or minerals; and the "beneficiation" or preparation for marketing. Petroleum and Natural Gas Engineering is concerned with the search for new fields; the drilling of wells; and the production, storage, and transportation of natural gas, crude oil, and petroleum products. Note: The field is very closely related to chemical engineering and the refining of oil is classified with chemical engineering, even though closely associated with petroleum engineering.

MINING, PETROLEUM, AND NATURAL GAS ENGINEERING (Technicians). Work, training, and leisure pursuits in assisting engineers in the extraction of ores, coal, petroleum, natural gas, etc., from the earth.

Explore DOT OGA: 010 Mining and Petroleum Engineering Occupations

RELATED COURSE AREAS: Accident Prevention and Safety Engineering, Barodynamics, Coal Mining, Design of Mine Plants, Elements of Geophysical Prospecting, Elements of Mineralogy and Petrology, Engineering Materials, Fundamentals of Well Logging, Geologic Field Methods, Geology for Engineers, Geology of Oil and Gas, Materials Handling in Mines, Mine Design, Mine Equipment and Machinery, Mine Surveying; Mine Ventilation, Safety, and Law; Mineral Exploration, Mining Methods, Mining Methods for Vein Deposits, Mining Operations, Oil and Gas Production, Oil Field Development, Ore Deposits, Petroleum Engineering, Petroleum Engineering Design, Petroleum Geology, Petroleum Reservoir Engineering, Petroleum Technology, Report Writing, Sampling and Valuation, Theory and Practice of Ground Control.

ENGINEERING TECHNICIANS. Technicians who work in support of engineers, performing tasks which are functional parts of engineering activities, requiring practical application of fundamental theory.

Explore D.O.T. OGA's: 00 and 01 Occupations in Architecture and Engineering (Technicians)

Related Career Possibilities: 02 Occupations in Mathematics and Physical Sciences; 199 Misc. Professional, Technical, and Managerial Occupations, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Strong science and mathematics high school background. Note: Usual specific vocational preparation is secured in two- and three-year technical institutes, junior or community colleges, armed forces training and home study training, through on-the-job training, or by obtaining a terminal B.S. engineering degree. Algebra, Geometry (Plane, Solid, Descriptive, Analytic), Trigonometry (for some jobs Calculus and Vector Analysis), Basics of Chemistry, Physics, Electricity (for some jobs Nuclear Science), Blueprint Reading, Cost Estimating, Drafting, Engineering Drawing, Industrial and Machine Shop Practice, Laboratory Procedures, Preparation of Test Reports, Quality Control and Testing, Technical Writing.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The technician's orientation is basically in terms of making and doing, in contrast to the engineer's concentration on planning, even though there is overlap. The technician usually applies rather than formulates rules. Most technicians must: understand fundamentals of mathematics, physics, chemistry. Comprehend technical verbal material. Write clear, concise reports. Visualize spatially and be able to prepare sketches and drawings. Use slide rules, calculating machines, engineering handbooks, laboratory apparatus, drafting instruments, precision measuring techniques, and formulas. Interpret intricate engineering drawings. Communicate effectively with both engineers and shop personnel. Technicians in design work who originate ideas or develop engineering ideas, require esthetic judgment. The role of technician as a type of occupation is given more detailed discussion under the general section on technicians.

RELATED LEISURE PURSUITS: See under Leisure Pursuits for Engineers and Technicians combined.

ILLUSTRATIVE TEMPERAMENT ROLES: Objectivity is emphasized for engineering technicians in that they are required to think more by rule than the engineer; their decisions are largely guided by instrument readings and test data. It is important for them to be rigorous in situations requiring strict discipline and attention to meet exacting requirements as the SYSTEMS TESTING LABORATORY TECHNICIAN applying involved rules by which complicated calculations are carried out OR the HOT-CELL TECHNICIAN picking up specimens of radioactive materials with manipulators and placing in shielding containers. Technicians are valuative when analyzing previous experience as a basis for making decisions as the CERAMICS ANALYST selecting techniques for running tests OR the MECHANICAL TECHNICIAN deciding the size, shape, and alloy of tools best suited for an operation. They may perform under stress in jobs dealing with critically reacting chemicals or potentially hazardous radiation areas, etc. Those technicians whose jobs require them to plan and direct projects to completion, must have the capacity for dominance, in that the work may involve the supervision of several assistants, even though the technician himself may work under the engineer's general instructions.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Scientific to comprehend and assimilate the scientific principles and data required to solve problems, e.g., laying out experimental circuits to test scientific theories OR observing and analyzing causes, as erosion and atmospheric effects on space vehicles. Things and Objects as work is usually things-centered.

VARIABLE INTERESTS: Abstract, Creative in activities such as devising tests to insure quality control OR modifying mathematical procedures to fit specific problems. Business Contact in liaison work between engineering department and shop personnel.

ORGANIZED KNOWLEDGE
ENGINEERING AND RELATED

DRAFTING AND RELATED. Work, training, and leisure pursuits involving the use of drafting instruments and limited engineering knowledge to develop working plans, patterns, and layouts. Design draftsmen work from general ideas furnished by engineers. Other draftsmen follow precise engineering specifications.

Explore DOT
OGA's: 017 **Draftsmen,** n.e.c.; All drafting occupations in 00 and 01 Architectural and Engineering Occupations

Related Career
Possibilities: 018 Surveyors, n.e.c.; 14 Occupations in Art; 249.281 Drafting Clerk

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Mathematics through Trigonometry. Blueprint Making and Reading, Composition, Cost Estimating, Design Drafting, Drafting Instruments, Drafting and Drafting Room Practice, Drafting and Shop Practice, Engineering Drawing, Isometric and Perspective Drawing, Lettering, Mechanical Drawing, Tool Design, Wiring Layouts. Specialized courses in electricity, tool design, machine design, etc.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Ability to translate ideas and sketches made by engineers, architects, and designers into scaled patterns and plans. Understand and interpret intricate engineering drawings. Limited knowledge of engineering practices, building materials, circuits, etc. Spatial ability - visualize objects and forms in preparing plans and drawings. Ability to perceive shapes and figures in making sketches of pictorial representations. Know principles of isometric and perspective drawing and how to transfer engineering data from one scale to another. Principles of lettering. Principles of composition. Use of drafting instruments such as compasses, dividers, scales, and protractors. Skill in using precision measuring instruments. Use standard engineering handbooks and formulas. Use arithmetic, algebraic, and geometric procedures in computing dimensions, stresses, fatigue factors, etc. Finger dexterity to use drafting instruments to produce accurately scaled drawings and blueprints.

RELATED LEISURE PURSUITS: Consider activities listed under Engineers and Engineering Technicians. Any activities in the line of applied art which show skill in freehand drawing or lettering, e.g., drawing geometric figures for decoration. Pursuits which involve the making of measured drawings, blueprints for models, or the designing and drawing to scale plans for model airplanes, boats, trains, etc.

ILLUSTRATIVE TEMPERAMENT ROLES: Objectivity in checking drawings for completeness and accuracy and for conformity to building and other applicable codes, and in checking shop drawings for conformity to working drawings. Rigorous in drafting to scale, accurate detailed drawings of building plans for use in construction. Valuative in making judgments on the basis of knowledge and experience

regarding the selection, improvement, and practicality of designs.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Working with Machines, Processes and Techniques in that individual effort, knowledge, and self-reference predominate in relation to definitely organized techniques, as the ARCHITECTURAL DRAFTSMAN utilizing his knowledge of the various styles of architecture to prepare preliminary plans from architects's sketches for client's approval. Scientific in that the DRAFTSMAN is required to obtain and apply specialized technical and scientific knowledge of such factors as the significance of specialized instrument readings, mechanics of materials, checking the dimensions of parts, and the details of arranging things and relating various parts of an entire structure. Routine, Concrete Organized in adjusting to long hours spent at the drawing board, performing tedious tasks such as inking lines and letters.

INTERESTS - VARIABLE: People and Communication of Ideas as the STRUCTURAL DRAFTSMAN drafting artistic features of buildings. Abstract, Creative in planning structural or mechanical features of buildings or mechanisms and in making design drawings.

SURVEYING AND RELATED. Work, training, and leisure pursuits concerned with determining and identifying the shape, contour, location, and dimensions of land or land features, and preparation of findings.

Explore D.O.T. OGA's: 018 Surveyors, n.e.c.

Related Career Possibilities: 005 Civil Engineering Occupations; 010 Mining and Petroleum Engineering Occupations; 017 Draftsmen, n.e.c.; 024 Occupations in Geology; 85 Excavating, Grading, Paving and Related Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: High school preferred courses: Algebra, Calculus, Drafting, Geometry, Mechanical Drawing, Physics, Trigonometry.
Other: Construction Layout, Surveying, Engineering Surveying, Geodetic Surveying, Surveying, Surveying Instruments, Surveying Terminology, Topographic Computing, Topographic Mapping.

Licensing is required by the majority of states. The most common method of preparing for work as a surveyor is through a combination of post-secondary school courses and extensive on-the-job training in survey techniques and in the use of survey instruments. Colleges and universities having civil engineering curriculums provide surveying and related subjects as part of these curriculums. A few other 4-year colleges, and some junior colleges, technical institutes, and vocational schools offer 1-, 2-, and 3-year programs in surveying. Extension courses in surveying are frequently offered. Armed forces training in surveying is qualifying. A bachelor's degree in engineering or a physical science is usually required for highly technical surveying such as geodesy, topography, or photogrammetry. Even graduate study may be required in such specializations. The usual course of advancement in surveying is through on-the-job progression from Chainman and Rodman to Surveyor or Party Chief. Frequently combination jobs of Engineer and Surveyor exist.

RELATED LEISURE PURSUITS: Liking for pursuits "in the open," using cots and air mattresses for sleeping on the ground. Exploring, climbing mountains. Going "caving." Physical activity: walking, swimming, digging, in any kind of weather. Liking to be "on the go." Studying globes, atlases, geographies, and maps. Rock collecting. Freehand drawing and drafting. Junior Engineering Technical Society. Interest in surveying instruments.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The surveyor is the first on the scene when the new skyscraper is going up or the old one being demolished. There is no construction without him; no road, dam, airport, or factory is built; no urban renewal carried out. When the elevation of the unclimbed mountain is being calculated, the sea bottom mapped, a swamp drained, or city zoning regulations checked out, the surveyor is there at the beginning of the operation. When the property owner buys or sells, the surveyor is involved in the transaction, checking out the boundaries of the land.

The requirement pattern for the surveyor is almost contradictory in that he should like both the outdoors and at the same time detail work. He must be accurate, painstaking, and possess a high level of computational ability. He requires the ability to visualize objects in space; hence requires spatial aptitude. Near and far vision, as well as normal color discrimination. Eye-hand coordination and finger dexterity in the adjustment of instruments to fine tolerances. Stamina to carry and manipulate heavy instruments. Must be physically rugged to work under all kinds of weather conditions. In that so much of the world is unsurveyed and unmapped, surveyors frequently have the opportunity to travel, if they wish. They are sometimes exposed to hazards such as snake and insect bites, and falls in mountain surveying.

ILLUSTRATIVE TEMPERAMENT ROLES: Surveyors are objective in that they make decisions on the basis of measurable, verifiable criteria such as deed descriptions, landmarks, and engineering specifications. As they carry out their tasks, they continually check findings. They are rigorous in the making of detailed measurements which must be precise and verified for accuracy. Inasmuch as they work in teams and frequently supervise a crew, they must be effective in a group situation. Surveyors who have attained supervisory status must be able to direct, control, and plan the work schedule of a crew. They plan the fieldwork, selecting survey reference points and determining the precise location of the features of the survey region.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Scientific particularly for specialties such as geodetic surveying which deal with such factors as the earth's curvature and its geophysical characteristics. Things and Objects for the surveyor works in an environment which is dominated by things: the physical characteristics of the terrain and the use of various mechanical devices and instruments. Working with Machines, Processes, and Techniques in application of specialized surveying techniques such as theodolite, transit, level, altimeter, and electronic measuring devices.

AIR FLIGHT. Work, training, and leisure pursuits which involve manning the controls of flying vehicles or the ground-based controlling of air traffic.

Explore DOT OGA's: 193 Radio Operators; 196 Airplane Pilots and Navigators

Related Career Possibilities: 002 Aeronautical Engineering Occupations; 019 Occupations in Architecture and Engineering, n.e.c.; 91 Transportation Occupations, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: High school graduation with high academic standing is required for jobs in this general field. Valuable high school courses are basic sciences, mathematics, electricity, public speaking, English, shop courses, and typing. The intelligence and personal discipline requirements for the occupations are high and aspirants must demonstrate their emotional maturity on the basis of psychological tests. All occupations are licensed and candidates qualify only after extensive specialized training, including extended periods of supervised experience and the passing of a series of tests in air traffic rules, and practical and theoretical knowledge to demonstrate readiness to function as independent workers. These occupations are frequently filled on the basis of military experience.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): These are extremely demanding occupations, requiring the ultimate in self-discipline. They are prestigious and financially rewarding; they hold a lure for many who see them, along with the ASTRONAUT, in terms of romance and adventure. Yet the field has become quite structured and institutionalized, with a strict seniority system and elaborate rules designed to standardize flight performance and increase formality and impersonality. This makes the field of work, in large part, a far cry from the image of its daredevil barnstorming past. Yet remnants of that past do remain in some aspects of the field other than jobs with the scheduled airlines. In addition to scheduled airlines, pilots are employed by owners of private aircraft, air taxi services, in agricultural work (crop dusting, spraying, and seeding), in flight schools, for aerial photography and sky writing, in firefighting and patrolling international boundaries.

There are many things which a pilot must be aware of at one time: the feel of the plane under him, the noise of the motors, the messages from the ground which his earphones are bringing in, the indicators on his instrument panels, and meteorological events in the surroundings of the plane. This constant use of all his senses may be very tiring and because of this nerve strain, a pilot cannot fly too many hours at a time. Pilots are put in unprecedented situations in which they actually have no standards by which to judge what constitutes minimum performance. They are subject to strain not characteristic of most occupations because they are periodically subject to checks and the flight surgeon can "ground" them at the first indication of a physical defect. Moreover, unpredictable crisis situations may arise which crucially affect the career progress of the pilot.

The nation's airways are guarded by the AIR TRAFFIC CONTROLLERS employed by the Federal Aviation Agency.

Airport controllers control traffic in areas around an airport. They are stationed in control towers, give takeoff and landing instructions, etc. Air-Route traffic controllers guide planes between airports, coordinating movements of planes flown "on instruments" by using the written flight plans made by pilots and dispatchers before aircraft left the airport. The work of controllers is very responsible and the personal penalty for a mistake on their part is very severe. It can result in the loss of many lives and the destruction of much property and a ruined career for the controller. Controllers qualify on the basis of civil service examinations. They must know a great deal about weather, geography, radar equipment, and the size, speed, and operation habits of aircraft.

The retirement age in these aircraft occupations may be early and there is often a prospect that the workers may want to plan second careers.

RELATED LEISURE PURSUITS: Sports participation which develops physical agility and ability to cooperate with others. Public speaking activities to develop good speaking voice. Any spare time pursuits working with hands, tools, or machines. Hobbies which require some knowledge of aeronautics and civil air regulations, such as model plane building, amateur (ham) operating, or aviation reading interests. Getting an amateur radio operator's license. Taking flying lessions and study for a private flying license. Automobile or machinery repair. Working around an airport. Learning Morse code and practicing it. Belonging to radio club, high school aviation club, Civil Air Patrol, Air Scouts Division of the Boy Scouts, astronomy or meteorology groups.

ILLUSTRATIVE TEMPERAMENT ROLES: Dominant - the jobs require a very high capacity for assuming responsibility. On an aircraft, the captain's decision is law. Ground traffic controllers cannot falter in making decisions. Airlines people must be sufficiently gregarious to work smoothly in a team situation and to make a good impression on passengers, hold their confidence, and allay any fears or misgivings on their part. Self-Control is the most basic temperamental requirement. For the PILOT this may be manifested in the high courage with which he keeps his voice calm and his performance finely controlled as he makes the cry of disaster "mid-air, mid-air." For the AIR-TRAFFIC CONTROLLER, his testing for self-control may come on a night of murky clouds when he coordinates ten to twenty planes circling in dizzy, whirling, geometric patterns, playing tag with death it seems, as he tries to track, separate, and direct them, working at a very high tempo, keeping many details in mind at once, giving instructions and listening to incoming messages simultaneously. It is basic to these jobs that the workers strive objectively and with tenacity for all facts possible which point the way to correct decisions. They must also be valuative and possess the capacity to make split-second judgments on the basis of own best assessment of situations when they are in the dark, when all the facts are not in. This may be the TRANSPORT PILOT in mid-ocean, with two of four engines feathered, making the decision to ditch or not to ditch. It may be the TEST PILOT disoriented in a disintegrating test craft who must decide whether to eject and save himself or to go down with the craft in order to guide it away from a populous suburb or a factory complex. Rigorous as the PILOT in his operation of the controls required to get the airliner airborne, keep it on course, and return it safely to earth.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Scientific to learn readily the large amount of applied scientific knowledge involved. Working with Machines, Processes, Techniques as the COPILOT maintaining vigil over plane's instruments OR the FLIGHT ENGINEER controlling engine performance in flight. Things and Objects in that center of attention is on things and their mechanical function for much of the time. Business Contact because they are in continual contact with the air-minded traveling public. Prestige - particularly for PILOTS - among flying occupations, the public regards only the ASTRONAUT with more special esteem.

AUDIO AND VIDEO TRANSMITTING AND RECEIVING. Work, training, and leisure pursuits mainly concerned with operating equipment to transmit or receive audio or video signals.

Explore DOT OGA's: 193 Radio Operators; 194 Sound Recording, Transcribing, and Reproduction Occupations

Related Career Possibilities: 003 Electrical Engineering Occupations; 72 Occupations in Assembly and Repair of Electrical Equipment; 960 Motion Picture Projectionists; 962 Occupations in Production of Motion Picture, n.e.c.; 963 Occupations in Radio and Television Production, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: These various jobs require high school graduation with a strong background in scientific, mechanical, and mathematical subjects. Typing and public speaking are valuable to would-be radio operators. Graduation from a good technical high school or trade school is sufficient preparation to enter some jobs. Some highly competent amateurs enter directly. Armed Services training is qualifying. Training may be obtained in specialized technical schools, by apprenticeship, in junior colleges, and on-the-job. Four-year college programs prepare for some phases of the work. All workers in this field who transmit communications must be licensed by the Federal Communications Commission.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): These are comparatively new occupations, having come into being with the advent of communications systems which utilize electromagnetic waves as carriers. Electrical engineers of various types perform the more complex activities in this field. The basic work of the radio operator is to receive and send messages by radiotelegraph or by radiotelephone equipment or both. He is employed by the airlines, Armed Forces, broadcasting industry, steamship lines, railroads, the telephone and telegraph industry, the Federal Aviation Agency, and various other organizations which require radio communication such as exploration groups, lumber companies, taxicab stands, police, fire departments, etc. His work will vary according to the needs of his employer. He must have acute hearing, a well-modulated voice and the ability to enunciate clearly. He requires a solid background in radio operational and maintenance techniques. He must have the ability to type at least 40 wpm. He may have to sit for long hours in a confined work space. Many jobs require a basic knowledge of the language of weather reports.

Broadcast technicians in audio and video transmitting and receiving set up, operate and maintain the electronic equipment used to record or transmit radio and television programs. Similar technicians are engaged in recording activities in motion picture, phonograph record, and tape production. These technicians work with equipment such as microphones, sound recorders, lighting equipment, sound effects devices, television cameras, magnetic video tape recorders, and motion picture projection equipment. In the control room, broadcast technicians operate sound equipment that regulates the quality of sounds and pictures being broadcast. In small establishments, the technician performs a wide array of duties whereas in the large one, the work is divided among specialists.

RELATED LEISURE PURSUITS: This is a field of work in which many of the occupations can be learned almost entirely as an amateur. Persons in it are frequently "hams" whose involvement with radio and electronics began in early adolescence. Building and operating an amateur radio station. Building a short-wave radio set. Getting an amateur operator's license. Reading all available literature about audio and video, and the various popular magazines on the subject. Learning the Morse code and practicing using it. Active participation in radio club.

ILLUSTRATIVE TEMPERAMENT ROLES: Objective as the VIDEO CONTROL TECHNICIAN operating controls that regulate the quality, brightness, and contrast of television pictures, verifying the result constantly to see that the pictures are conforming to acceptable standards. Rigorous as the RADIO OPERATOR in transcribing messages which have come to him in code, avoiding all errors in converting code to English text. Self-controlled in situations which involve transmitting or receiving emergency messages as to or from aircraft in flight OR manning the radio operation onboard a ship which has suffered a catastrophe such as collision or fire, working calmly and cooly and carrying out orders quickly and accurately.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact for some jobs which involve much contact with others in business situations. Scientific because of scientific nature of much of the subject matter dealt with: principles of electromagnetic wave propagation and other phases of physics. Working with Machines, Processes, Techniques as the BROADCAST TECHNICIAN installing and maintaining complex electronic equipment. People and Communication of Ideas in that communications as an activity is the center of these people's working lives, the BROADCAST TECHNICIAN in all that he does, the RADIO OPERATOR continually sending out such messages as: "Pittsburgh, Pittsburgh, ceiling unlimited, ceiling unlimited, high scattered clouds, low scattered clouds at 5000 feet, visibility nine miles, temperature eighty-eight, dew point 70, wind northwest seven, barometer 29.95."

TECHNICAL PHOTOGRAPHY. Work, training, and leisure pursuits which involve the gathering of industrial, medical, scientific, legal, engineering, or other technical information through photography and employing skilled camera techniques.

Explore DOT OGA's: 143 Occupations in Photography (Especially 143.282 Photographer, Scientific; 143.382 Biological, Aerial, Police, etc.)

Related Career Possibilities: 141 Commercial Artists; 019 Occupations in Architecture and Engineering, n.e.c.; 13 Occupations in Writing; 193 Radio Operators; 194 Sound Recording, Transcribing, and Reproducing Occupations; 196 Airplane Pilots and Navigators; 962 Occupations in Production of Motion Pictures, n.e.c.; 963 Occupations in Radio and Television

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: B.P.A. Bachelor of Professional Arts; B.S.B.A. or B.F.A. degree in photography. Diploma or certificate from technical school in Audio-Visual, Industrial, Color, Commercial, Advertising, Illustration, Still, Scientific, Medical, High Speed, Police, Court, Museum, Photostat, Aerial, X-Ray. May prepare for occupation through serving apprenticeship in studio. Engineering background required to qualify as a photographic engineer.

RELATED COURSE AREAS: In high school: Art, Chemistry, Physics. Other: Animating, Color Theory, Color Photography, Basic Design Principles, Graphic Arts, Photographic Design, Photography Essentials (cameras, photographic equipment including lenses, film and film speeds, shutters, filters, lights, exposure meters, negative development and retouching, printing, enlarging and toning, photochemistry, lighting and background arrangement, photographic optics), Motion Picture Photography, Sound. Any technical courses which relate to photographic specialty in which engaged.

RELATED LEISURE PURSUITS: Great interest in photography and constant use of camera as a free lance, coupled with pursuits related to particular technical area.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): These photographers are more oriented to science and engineering than to the world of art, and their values and manner of working trend towards the technical rather than artistic. They must be expert in the technique of producing accurate, sharp, clear-cut, literal representations of the subject to be photographed. It is often essential that they have considerable knowledge of the fields in which they photograph. However, the limits of artistic and technical photography are not finely drawn and the photographer may be engaged in both types. Although the basic aim of technical photography is essentially the producing of a literal record, it may still be required to conform to good standards of composition. Therefore, the technical photographer requires understanding of the principles of pictorial composition and design. Know principles of lighting, reflections, highlighting and shading, strength of colors and their absorption of light.

Technical photography may include: manufacturing processes, manufacturing products, machines, and machine operations; scientific, engineering, and other research photography; clinical photography of such things as operations, pathological conditions, etc., for diagnostic purposes of teaching; aerial photography for government planning, mapping, etc.; court photographs of evidence; police photography of suspects and criminals; museum photography such as X-rays of paintings and reproductions of paintings; military photography; photostats of historical records; construction and welding photography; and high speed photography of projectiles in flight; high speed machinery, or other physical phenomena taking place at great speed.

ILLUSTRATIVE TEMPERAMENT ROLES: Objective in striving for pictures that are sharp, clear, and free from distortion in order that they give no rise to questions of fact. Rigorous as the meticulous technician shooting test after test to work out the right lighting.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Working with Machines, Processes, and Techniques in the use of expert camera techniques required to produce photographic records of highly technical subject matter. People and Communication of Ideas in that must be alert to the finished images in order that the pictures provide the information required.

INTERESTS - VARIABLE: Abstract, Creative in his control of color values and mastery over the geometric structure which holds the photographic image together from the standpoint of composition. Business Contact in that he is frequently involved in situations which require a businesslike manner. Scientific for the research photographer engaged in some form of scientific investigation.

BASIC VOCATIONAL DIRECTION

BUSINESS RELATIONS

Accounting Work
Mathematical Analysis
Purchase and Sales
Advertising and Public Relations
Market and Motivational Research
Traffic Management
Personnel Management

BUSINESS RELATIONS (GENERAL FIELD DESCRIPTION)

In BUSINESS RELATIONS work ORGANIZED KNOWLEDGE is applied in activities as diverse as accounting, market and motivational research, purchase and sales work, some phases of personnel administration, advertising and public relations. People in these activities study problems which are related to fiscal organization, industrial production and marketing, or consumer preferences and purchasing habits. Jobs often involve unpredictable working hours and working under great pressure.

People in business relations pursuits tend to share a value system which is geared to economic purpose and the competition of the market place. The main interest and ambition is directed towards economic and business accomplishment. They share a life style which requires a businesslike appearance, personable manner, and effective use of English to communicate clearly, orally or in writing. They take pride in their role which they see as generating the elan vital that keeps the economy lively and society stable.

People in business relations range from the fiercely individualistic entrepreneur to the team personality who has become known as the "organization man." The occupations occupy a continuum from the fixed and structured, exemplified by the discipline of accounting, to the shifting and unstructured, typified by public relations which can accomodate backgrounds as diverse as sports, religion, medicine, and agriculture, as well as the creative generalist.

Many occupations in business relations require a knowledge of psychology, sociology, economics, or other social science. Accounting, statistics, and programming may be combined with legal, engineering, management, and even scientific training for occupations which require a multi-disciplinary approach. For many types of purchase and sales work the liberal arts and business administration are a main recruiting source. Talented people who leave school early or who dislike committing themselves to one profession find opportunity in business relations.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Accounting, Advertising, All Liberal Arts Courses, All Social Science Courses, Art, Banking, Behavioral Sciences, Business Administration, Business Law, Buying, Conference Techniques, Credit, Distributive Education Courses, Dramatics, Editing, English, Fiscal Management, Journalism, Marketing, Procurement, Programming, Publicity Media, Public Relations, Public Speaking, Sales Courses, Statistics, Traffic Management, Writing.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The work culture of business relations is hard driving towards success. People in the work typically set up goals which are difficult to attain and exercise their utmost in strength and talent to advance their personal progress and that of employing organization. To succeed, they need to be keen in appraising situations, seeing alternative courses of action, and anticipating the consequences of their decisions. Talent for inducing others to one's own point of view. Facility in dealing with groups, organizing them or holding their attention. Ability to extemporize or "ad lib:" spontaneity in seeing, thinking, and talking simultaneously. Skill in "telling" - curiosity as to why and how people react. A broad cultural background is an asset. Intelligence, verbal and numerical are the most frequently used aptitudes.

RELATED LEISURE PURSUITS: Socially inclined pastimes which indicate an interest in taking part in the world around, in observing people, and in getting to know them and understand them, which may manifest itself in an awareness of what makes the average person "tick" - what he reads, listens to on radio, looks at on TV, for instance. Reading: fashion magazines, Wall Street Journal, Fortune, Banking, Nation's Business, Business Week, Financial World.

ILLUSTRATIVE TEMPERAMENT ROLES: Dominant in self-confidence to assume total responsibility for a course of action. Gregarious to adjust to frequent dealing with individuals and groups. Influencing to induce others to one's own point of view. Valuative in depending on "hunches" about people as a basis for making a decision one way or the other. Objective in seeking out all pertinent facts as a basis for planning a course of action. Rigorous for job such as ACCOUNTANT who puts much meticulous, precise thinking into his analysis of a set of data and its effect upon a business situation. Self-controlled in the face of resistance, indifference, or affront. Versatile in wide range of ideas and situations which may engage the attention. Subjective especially for jobs requiring the interpretation of tastes and imagination in dreaming up ways to appeal to the tastes of others.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in that must be expert in generating good will. People and Communication of Ideas in need to observe and know people, how they make up their minds, what intrigues them, what repels them. Prestige in that work often results in economic success and prominance in the world. Abstract, Creative for jobs which emphasize the synthesis of new approaches in advertising, selling, accounting systems, etc. Scientific and Things and Objects for specialized selling, buying, or advertising jobs which involve technical knowledge about a product, machine, or scientific process of some kind.

ACCOUNTING WORK. Work, training, and leisure pursuits that require the application of principles of accounting, auditing, cost analysis, or statistics to problems of fiscal management, involving the preparation of reports, giving advice to management, devising and installing accounting systems, developing insurance plans,and the determination of other matters which may be involved in the financial operation of a business or other organization.

Explore D.O.T. OGA's: 160 Accountants and Auditors

Related Career Possibilities: 161 Budget and Management Analysis Occupations; 191 Agents and Appraisers, n.e.c.; 21 Computing and Account Recording; 22 Material and Production Recording; 24 Misc. Clerical; 020 Occupations in Mathematics; 18 Finance, Insurance, Public Adm., and Real Estate Managers

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Accounting (Public Accountants are known as Certified Public Accountants or CPA's), Business Administration, Financial Statistics, Insurance Accounting, Mathematics, Programming.

Accounting, statistics, programming, etc., may be combined with legal, engineering, management, and even scientific training for special occupational situations requiring a multidisciplinary approach.

RELATED COURSE AREAS: Accounting, Accounting Systems, Accounting Theory, Actual Science, Algebra, Auditing, Bank Accounting, Banking, Bookkeeping, Budget Systems, Business Administration, Business Arithmetic, Business Budgeting, Business Cycles, Business English, Business Finance, Business Organization, Business Psychology, Calculating Machine Operating, Calculus, Commercial Geography, Commercial Law, Contracts, Corporation Finance, Cost Accounting, CPA Review, Credit Management, Economics, Electronic Data Processing, Estate Administration and Taxation, Federal and State Taxation, General Insurance, Government Accounting, Income Tax Accounting, Industrial Economics, Insurance Law, Insurance Underwriting, Investments, Life Insurance, Logic; Money, Banking and Credit; Negotiable Instruments, Overhead, Pricing Systems, Programming, Property and Casualty Insurance, Public Relations, Public Utility Accounting, Quality Control Statistics, Real Estate, Social Studies, Statistics.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Mathematical ability. Main interest, ambition, and values directed towards economic and business accomplishment. Ability to appraise situations, to see alternative courses of action and anticipate their consequences, and willingness to choose among alternatives. Skill in presenting data in the form of charts, graphs, and tabular arrangement. Ability to grasp a mass of details, see relationships among them, and apply logic to their analysis. Businesslike appearance, personable manner, and ability to use English effectively to communicate orally or in writing.

RELATED LEISURE PURSUITS: Activity and interest in fiscal management in school, church, clubs, etc. Organizer of school functions involving funds. Business manager or treasurer of any group. Skill in such things as adding a column of figures rapidly and accurately; solving mathematical problems in head; keeping baseball, bridge, or other scores; computing discounts, etc. Liking for mathematical games and problems. Member of a chess club, or playing any game depending on logic, as bridge or checkers. Following stock market reports. Reading interests such as financial pages of newspaper, Wall Street Journal, Nation's Business, Banking, Fortune, Business Week, Financial World, etc.

ILLUSTRATIVE TEMPERAMENT ROLES: Perhaps no work activity so much epitomizes objectivity as the ACCOUNTANT assembling all necessary facts and figures to prove incontrovertibly such matters as whether money is being saved or lost. Dominance is important. ACCOUNTANTS need self-confidence to assume total responsibility for an area of work which may determine the courses of action followed by managerial levels of a company, government agency, or other organization. The meticulous, precise thinking which goes into the analysis of accounting data requires a rigorous turn of mind. ACCOUNTANTS work by a code of exactness which requires them to spend hours, if necessary, to locate a misplaced decimal point. They are also required to be valuative, e.g., on the basis of expert background knowledge and current following of the business news, making recommendations to clients on such matters as forecasting business trends, stock futures, or most favorable business location sites. In making such recommendations, they must evaluate various alternatives and use good judgment in choosing which course to recommend.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in constant communication with management to help keep it abreast of what is going on in company in order to plan for the future, and also in dealing with the general public and government officials. In higher levels of the jobs, Abstract, Creative, in that the work may involve a mental synthesizing of symbols and general concepts as the ACCOUNTANT devising new and more efficient accounting systems. Prestige in that these jobs often provide the worker favored opportunity for key status in business and in government.

MATHEMATICAL ANALYSIS. Work, training, and leisure pursuits which involve the mathematical analysis or programming of business, industrial, economic, or related social situations.

Explore D.O.T. OGA: 020 Occupations in Mathematics (Computer Engineers, Programmers, Actuaries, Business and Social Science Statisticians)

Related Career Possibilities: 160 Accountants and Auditors; 252 Salesmen, Business and Financial Services; 186 Finance, Insurance, and Real Estate Managers and Officials; 188 Public Administration Managers; 21 Computing and Account Recording Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS, COURSES, AND SPECIALIZATIONS: A B.S., M.S., or Ph.D. in mathematics is required for many of the jobs. Others require a degree in the particular subject matter field. There is considerable variation in the means by which people enter these types of jobs. Professional standing as an actuary is achieved only after a series of examinations have been successfully passed. This may take, on the average, from five to ten years. The actuary is usually, but not always, a college graduate. Jobs involving the programming of business problems are frequently filled by employers from the ranks of those with previous experience in work such as machine tabulation, payroll work, or accounting. COURSES: Accounting, Bookkeeping, Business Administration, Correlation Analysis, Demography, Differential and Integral Calculus, Economics, Electronic Data Processing, English Composition and Speech, Experimental Design, Insurance Law, Investments, Office Practice, Probability Theory, Psychology, Regression Analysis. Courses which are listed under Accounting, Mathematics and Logical Systems, and Engineering may also be applicable.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Because mathematics is a tool used in many different fields, it is sometimes difficult to distinguish people who are primarily applied mathematicians from those who are chiefly subject-matter specialists using mathematics as a tool in performing their work. This is true of the people in the field of BUSINESS RELATIONS who are engaged in mathematical analysis. However, they can be generally described as people who are mathematically trained and competent, and whose inclination is towards the social, business, and industrial applications of mathematics, rather than pure mathematics or the application of mathematics to physical science. Along with their qualifications as mathematicians, they must possess specialized knowledge of methods for dealing with financial and social data. Such methods may include a specialized body of knowledge such as actuarial science, statistics, operations research, or numerical analysis. Knowledge of such specialized mathematics as computer programming, sampling techniques, design of experiments, or probability theory may be involved. Training such as this may be combined with training in business administration, insurance, market research, business analysis, forecasting, etc. All the people in this field share one quality in common -- the ability to solve problems in an orderly, logical manner. Useful aptitudes are intelligence, numerical, verbal, and clerical perception.

RELATED LEISURE PURSUITS: Consider those listed for other business relations activities, particularly Accounting and those listed for Managerial Work and for Mathematics and Logical Systems under the Sciences.

ILLUSTRATIVE TEMPERAMENT ROLES: Objective as the ACTUARY seeking out all pertinent facts bearing on insurance risk (as legal, social, economic, medical, etc.) before projecting predictive judgments; OR the BUSINESS PROGRAMMER converting symbolic statements of business problems to detailed logical flow charts for coding into computer language and solution by means of automatic-data-processing equipment; OR the FINANCIAL STATISTICIAN subjecting business data to formal statistical processing as a prerequisite to understanding and interpreting it. Rigorous as the STATISTICIAN setting up statistical samples of the population for economic study, and valuative as he considers the data derived from them in the light of his expert knowledge and appraises the current business situation in relation to his company, for both short and long term outlook. Dominant as the ACTUARY having charge of an entire insurance operation.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact for the jobs in which the mathematician serves in a consultant capacity to a firm or is involved in other business negotiations. Scientific in applying the rationale of scientific method to the solution of business problems. Abstract, Creative as the ACTUARY in the early stages of a project, such as a medical insurance program, social security system, or employees' pension and welfare plan, must see where the major problems lie and develop possible solutions OR the PROGRAMMER creating an electronic data processing procedure to accomplish a desired purpose in a more economical way. People and Communication of Ideas in that these people are oriented in their thinking chiefly to social ideas rather than to "things" such as machinery and tools (i.e., sociological rather than physical structures). Prestige in that these jobs are frequently ones in which the workers may be thought of as the mathematical pilots of the organizations involved, thus giving them favored opportunity for achievement of key status in business and in government.

PURCHASE AND SALES WORK. Work, training, and leisure pursuits which require a knowledge of contracts, credit, marketing conditions and applied psychology, in order to buy or sell services or materials.

Explore D.O.T. OGA's: 162 Purchasing Management Occupations;
163 Sales and Distributive Management Occupations;
169 Occupations in Administrative Specializations, n.e.c.

Related Career Possibilities: 25 Saleswork, Service;
26, 27, 28 Saleswork, Commodities;
29 Merchandising Occupations, Except Salesmen;
All occupations in 16 Administrative Specializations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS, COURSES, AND SPECIALIZATIONS: High school courses in English, business arithmetic, salesmanship, typing, distributive education, and public speaking are valuable. Many of the jobs are of the type in which the aspirant "starts at the bottom."

Liberal arts, business administration, and retailing major people are a major recruiting source. Many are advanced from within a business, as from the experienced salespeople, who may or may not be college trained. For technical and much industrial purchasing and selling, the emphasis is upon education and background in engineering, chemistry, electronics, or other technical subject relating to product involved. For buying, courses in retail buying, merchandising, fashion and design, consumer economics, business theory and practice are valuable. Other valuable courses for the field of PURCHASE AND SALES are: Accounting courses, Applied Psychology, Business Administration Courses, Commercial Law, Contracts, Credit Management, Economics, All Insurance Courses, Negotiable Instruments, Procurement and Materials Management, Real Estate, Sociology, Statistical Methods for Sales Control.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Talent for inducing others to one's own point of view. Facility in dealing with groups, organizing them or holding their attention. Ability to extemporize or "ad lib;" spontaneity in seeing, thinking, and talking simultaneously. Skill in "telling" -- becoming well informed about a service or product and talking convincingly about it. Curiosity as to why and how people react. Ability to adjust to unpredictable work hours and working under pressure. Although a talent for persuading others is a necessary qualification for any of the jobs, the personality style by which such a talent is manifested may vary widely. In some jobs the people need to be aggressive, greatly challenged by competition and hard work. In others the sales approach must be "low-key" and the aggressive stance will not work. In some sales jobs of this type, great persistence and patience is required, for the sales representative may not aim for immediate results and may work on "leads" for months or years before making a breakthrough. Many of the buyer jobs, especially women buyers in the field of retailing, have come to be known as "glamour jobs." This makes them attractive goals for many but the fact that they involve intense competition and very hard work should always be kept in mind as part of the picture.

RELATED LEISURE PURSUITS: Socially inclined pastimes. Activity in student government. Running for office in school or club. Liking for debating or other activity in which tries to win others to own point of view. Door-to-door sales during vacation, or activity in which explains a product, or demonstrates how a thing is done.

ILLUSTRATIVE TEMPERAMENT ROLES: Influencing people in their opinions, attitudes, and judgments about ideas or things is the basic temperamental requirement of these jobs, as the BUYER using persuasive skill to out-maneuver persons in trading and bargaining. Gregarious in that this work involves constant interaction with others and success depends upon insight into ways of appealing to them. Versatility in the wide range of ideas and situations which engage the attention and in varied activities such as calling on customers, visiting markets, and negotiating contracts and agreements. Valuative in all kinds of fine-line discriminations based on expert judgments, "hunches," and a cultivated sense of awareness of how people are prone to respond, which makes the difference in whether a prospective customer's interest is captured or he is left indifferent or resistant. Dominant in that most jobs require initiative and involve the worker in a role where he is pretty much his 'bwn boss."

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in conferring with department heads, and holding conferences to promote sales and to introduce new products. People and Communication of Ideas to need to communicate successfully in wide range of face-to-face negotiations, buying or selling, which are the main activity of work. Prestige in that jobs are frequently of key importance in an organization with close ties to management. Scientific for jobs which involve the selling or buying of technical or scientific products or services. Working with Machines, Processes, and Techniques for jobs which require activities such as analyzing manufacturing processes and factory layout.

ADVERTISING AND PUBLIC RELATIONS. Work, training, and leisure pursuits which involve advertising activities or the conduct of public relations functions.

Explore D.O.T. OGA's: 164 Advertising Management Occupations; 165 Public Relations Management Occupations; 040 Occupations in Psychology; 13 Occupations in Writing; 14 Occupations in Art

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS, COURSES, AND SPECIALIZATIONS: Inasmuch as the demands of the work are to promote a particular product or service, vocational preparation often relates to the particular product or service. For instance, public relations for a religious organization may require a background in religious history; for a farm magazine a background in agriculture; for a hockey club, a background in sports; for a paper manufacturing firm, experience with a line of paper; for a medical association, a background in medicine or biology. Recruits for advertising and public relations are drawn from various curricula: advertising, business administration, English, journalism, liberal arts, psychology, public relations, sociology, and others. COURSES: Applied Psychology, Conference Techniques, Dramatics, Editing, History, Psychology, Publicity Media, Public Speaking, Sociology, Writing.

RELATED LEISURE PURSUITS: Activities which have involved study of the behavior of people: artistic, literary, or scientific. Being advertising manager for school or college daily. Liking for debating or other activity in which tries to win others to own point of view. Verbal skills demonstrated in writing or public speaking activities, as in addressing groups, writing poetry, short stories, plays or other imaginative works. Local TV work, as doing TV commercials, e.g., sketches accompanied by words, music, and sound effects. Work in summer stock. Army Signal Corps film units experience. Scholastic or amateur background in dramatics. Skill in music, photography, playwriting, and art.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Public relations and advertising are considered "glamour" occupations but their reality demands are tough. The workers are essentially sales people, but their arts of persuasion draw upon diverse elements of the culture - history, literature, art, economics, psychology, anthropology. They sell ideas. They create the ideas they sell and words are very important to them as tools of their trade. Fabulous success or failure may depend upon choosing the right word at the right time. They may be required to take the technical language of a manufacturer and transform it into the language of the consumer's world in a way to generate motivation, evoke aspiration, turn longing into action. They may be called upon to produce what one advertising writer has called "the creative lie," as they engage in "the poetry of advertising." If the worker is a public relations man, i.e., a face-to-face persuader, he must be outgoing and personable, with the sensitivity to other people which enables him to see the world as it looks to them.

The work may have great meaning to its practitioners because of the opportunity it affords for creativity, for success, for feeling that society itself may be greatly influenced by their ideas. The work may be exciting and highly interesting in that the people in it may be much in the public eye and be accessible to public personalities and persons of power. Frequent travel and speaking engagements may add zest to living. The public relations person may live a day-to-day existence in which he knows nothing but friendly contacts very exhilerating and ego satisfying.

The other side of the picture reveals a variety of ways in which the jobs may be stressful. People in these fields tend to work on their own, but at the same time they may be in a situation in which they need to please several conflicting interests: clients, company executives, research people, etc. They must live with much uncertainty and unpredictability, the "irrationality of the marketplace" which occurs in spite of all efforts to rule out chance. It is possible for the person to "strike it rich," to become famous as the result of one brilliant idea. However, he may find himself doomed to a role of anonymity. Or things may not go well, and he will find himself blamed for the failure. Or he may be denied recognition for his ideas because of the speed with which ideas are copied by others. He needs the stamina to stand up under constant pressure of deadlines, criticism, and the ever-present possibility of total failure. If he is the public-relations person, he must maintain, even when under pressure, calmness and good humor. Chance and luck are a large part of the picture in these fields, and the worker needs very good judgment in placing his loyalties, in "knowing which horse to pick as the winner." Because of questionable tactics of "fringe" operations, responsible advertising and public relations people may encounter criticism and resistance from the public which is undeserved. For those who enjoy mastering the difficult and overcoming obstacles, the stresses of the work may not be important. These fields are allied to professionalism, but because of the large role which talent and creativity plays in the requirements for the work, the fields are not severely structured as are those in the helping professions.

ILLUSTRATIVE TEMPERAMENT ROLES: Influencing people in their opinions, attitudes, and judgments about ideas or things is the basic temperamental requirement of these jobs, as the ADVERTISING MAN whose aim is to make people want things and convince them that they need the particular goods or services which he represents. Gregarious in that work involves constant interaction with others and success depends upon insight into ways of appealing to them. Versatile in the wide range of ideas and situations which engage the attention and in varied activities such as organizing meetings, writing, making speeches, organizing groups, setting up programs, and planning advertising campaigns. Valuative in the cultivated sense of awareness of how people are prone to respond which is the necessary ingredient in formulating the advertising campaign which clicks rather than ending up as a dud. Dominant as the ACCOUNT EXECUTIVE developing an advertising program to meet the client's needs and wishes OR the MEDIA DIRECTOR determing the media -- television, outdoor posters, bus-car cards, radio, newspaper, or magazine.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in that these jobs require good business people, expert in generating good-will, attracted to the competition of the market place, and strongly oriented to economic values. People and Communication of Ideas in that work involves selling ideas and desires to individuals and to populations and brings into play almost all of the communication arts. Prestige in that work involves much association with prominent people in industry, television, the press, civic organizations, etc., and the opportunities for outstanding economic success are very good. Abstract, Creative in that the original, the fresh, the previously unthought of, is the stock-in-trade of these people.

MARKET AND MOTIVATIONAL RESEARCH. Work, training, and leisure pursuits requiring a knowledge of psychology, sociology, economics, or other social science and the application of this knowledge in helping business understand, predict, and influence the behavior of buyers and workers.

Explore D.O.T. OGA's: 040 Occupations in Psychology; 13 Occupations in Writing; 164 Advertising Management Occupations; 165 Public Relations Management Occupations; 020 Occupations in Mathematics (Statistics)

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS, COURSES, AND SPECIALIZATIONS. Recruits are from psychology, sociology, economics, statistics, or other social science. Writers and liberal arts people also find opportunity in this field. COURSES: Anthropology, Attitudinal Interviewing, Behavioral Science, Discrimination and Prejudice, Economics, Experimental Method, History, Interviewing, Interview Scheduling, Large Scale Surveys, Logic, Marketing, Marketing Psychology, Mass Communication, Personality Theory, Projective Techniques, Psychiatry, Psychology, Questionnaire Construction, Research Design, Sampling, Scale Construction, Scientific Method, Social Classes, Social Interaction, Social Psychology, Sociology. Sociometry, Statistics, Tabulating and Coding.

RELATED LEISURE PURSUITS: School and spare-time pursuits which have had as their subject the study of social and psychological problems. Free-lance writing. Literary societies. Science fair behavioral science projects. Conducting interviews as for school or church surveys.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The work is frequently referred to as creative, dramatic, and exciting. But much of it is tedious and the ability to adjust to unpredictable work hours and great working pressure may be needed. People who have curiosity as to why and how people react tend to be attracted to these jobs. The work may involve new, challenging problems every day, providing the opportunity for creativity, but forcing the worker into a hard-driving, competitive situation, which may be either stimulating or tension-producing, depending upon the personality. Intelligence, verbal, numerical aptitudes are useful.

ILLUSTRATIVE TEMPERAMENT ROLES: Influencing people in their opinions, attitudes, and judgments about ideas or things is the basic temperamental requirement of these jobs, as the MOTIVATIONAL RESEARCH SPECIALIST seeking new knowledge on how to influence the attitudes and motivations of people. Gregarious for the jobs which involve meeting and dealing with many different kinds of people. Self-controlled for those which involve the meeting of trying deadlines.

Objective as the MARKET RESEARCH ANALYST using validated questionnaires to secure research data OR the MOTIVATIONAL RESEARCH SPECIALIST investigating consumer psychology, employing standardized projective tests to probe people's secret motives for wanting to buy and following up with rigorous investigations to test conditions under which original findings are true. The MARKETING RESEARCH WORKER must be valuative in his ability to recognize problems and rigorous in his efforts to define the problems precisely and apply research techniques to solve them.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact because these people are very much involved with communication in the business situation. People and the Communication of Ideas in skilled use of language to frame questions which are effective in probing the motives that lead people to buy or not to buy particular commodities or services. Prestige in that work often involves contact with prominent personalities and is regarded by many as a "glamour" field of activity. Scientific in employing the behavioral sciences to discover inner forces, such as conflicts, aspirations, and needs, and external forces, such as class pressures, war threats, and religious traditions, which operate to produce reactions in the public mind. Abstract, Creative as in devising questionnaires which will be effective in detecting sensations, feelings, or images, evoked by products or services and in adapting clinical psychiatric methods and tools for use in researching the motivations of consumers.

TRAFFIC MANAGEMENT. Work, training, and leisure pursuits related to directing traffic flow of an organization.

Explore D.O.T. OGA: 184 Transportation and Communication Managers

Related Career Possibilities: 222 Shipping and Receiving Clerks

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS, COURSES, AND SPECIALIZATIONS: Business administration and liberal arts majors find opportunity as well as others who may work up from related types of work. Courses in transportation, communications, geography, management, economics, statistics, marketing, commercial law, business arithmetic, accounting, English are all valuable.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): People who are engaged in the flow of traffic may be arranging for the transportation of freight or passengers by rail, plane, or ship. They may be working with the traffic loads on communication circuits of various kinds, such as telephone systems or television facility hookups. Whatever the activity, they require good organizing and coordinating ability and the capacity to visualize locations of things and places in relation to each other and to synchronize the timing of activities. Useful aptitudes are intelligence, verbal, numerical, spatial, and clerical perception.

RELATED LEISURE PURSUITS: Belonging to amateur traffic club. Interest in and aptitude for the solution of traffic problems as demonstrated by observational and reading habits which may have resulted in an analysis of a particular traffic situation and perhaps a suggested solution (e.g., observing traffic flow in own community, detecting problems and snarls, and writing up analysis and proposal for an improved system). Keen interest in geography and maps; knowing many kinds of maps inside out: the nation's; those of cities; those of own community. Studying traffic management under the "pros" by attending traffic "institutes." Studying broadcasting or other communication systems and the problems involved in communication circuit coordination.

ILLUSTRATIVE TEMPERAMENT ROLES: Dominant to be able to maintain responsibility for an entire traffic program for an organization. Versatile to cope with varied problems which engage attention, e.g., setting up schedules, processing claims, leasing facilities, arguing cases before Interstate Commerce Commission. Gregarious because personal contacts and negotiations of various kinds are very important in the jobs. Objective in ascertaining that traffic scheduling is carried out in accordance with applicable government regulations and valuative in considering factors such as kind and amount of goods to be shipped, the time when delivery is needed, and costs, and selecting from among alternatives, a particular type of transportation, a particular route, and specific type of carrier, as rail, truck, or air. For jobs which involve a great deal of pressure and unpredictability, self-control.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact to deal with purchasing and sales department of firms and with regulatory bodies such as Interstate Commerce Commission or Federal Communications Commission. Prestige in that the traffic manager is frequently a pivotal person in his company.

PERSONNEL MANAGEMENT. Work, training, and leisure pursuits related to the utilization of personnel in an organization.

Explore D.O.T. OGA: 166 Personnel and Training Administration Occupations

Related Career Possibilities: Other Occupations in 16 Occupations in Administrative Specializations; 18 Managers and Officials, n.e.c.; 012 Industrial Engineering Occupations; 05 Occupations in Social Sciences

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED SPECIALIZATIONS: Personnel administration is offered as a specialization by many schools. Personnel workers draw upon the resources and tools of many fields, such as: psychology, public administration, statistics, economics, safety engineering, social welfare and management. Individuals in any of these fields may transfer into the field of personnel management, and personnel workers themselves may transfer into the broader fields of management or public administration. The liberal arts graduate frequently finds opportunity in this field. Sociology, English, and public speaking courses are valuable.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Personnel workers have a double function: (1) to provide for the full development of employees' interests and capacities, and (2) to make the personnel aspect of management more precise and measurable. They engage in various activities to accomplish these goals: recruitment, selection, and placement; training; position classification and pay plan separations; health and safety; and employee counseling.

They might be said to be concerned with the effective use of human beings in an organized enterprise, in contrast with production management which is concerned with the physical facilities of a plant.

Personnel workers are involved with the human relationships which are specific to an organizational setting: between the worker and management, between the worker and his job; and between the worker and his fellow workers.

Professional personnel workers are employed in business and industry, in government, and in schools and colleges. In industry and government they are generally concerned with the staffing of operating departments and agencies with competent, trained personnel and are thus responsible for the development and fulfillment of policies affecting recruitment, evaluation, selection, placement, training, transfer, discipline, job standardization and classification, rate setting, wage payment plans, counseling, grievances, health and safety, morale, labor relations, compliance with federal and State laws, separations, etc. They are usually responsible for public relations by obtaining the understanding and support of the personnel program from management, employees, the legislative bodies, the press and the public. Intelligence, verbal, numerical, and clerical aptitudes particularly, may be useful.

RELATED LEISURE PURSUITS: Leadership experience which has contributed to the individual's capacity to speak and write well and to understand people is important. These qualities may have been developed by active participation in such activities as dramatics, debating, sports, school publications. Student government leadership. Civic and social activities requiring the planning of work and the execution of activities cooperatively with others. Civil organization leadership, e.g., scouts, reserves. Social group managing, e.g., outings, dances, etc. Church leadership such as young people's programs or serving as program director for special events.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious to adjust to dealing with all kinds of people. Valuative to be a good judge of human reactions in individual situations. Dominant to function effectively in leadership role which is inherent in personnel management functions. Versatile in wide range of activities engaged in. Objective to take all aspects of a situation into account. Influencing to obtain acceptance of new personal plans from management and to "sell" company to employees.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in such activities as arranging for mediation, conciliation and arbitration of disputes between management and labor. People and Communication of Ideas in activities such as providing skilled advice on occupational, social, and emotional problems. Scientific in his use of validated psychological tests and other personnel appraisal instruments.

BASIC VOCATIONAL DIRECTION

MANAGERIAL

MANAGERIAL (GENERAL FIELD DESCRIPTION)

In MANAGERIAL work, ORGANIZED KNOWLEDGE is applied to planning, coordinating, and supervising an organization or work activity, either in accordance with specified policies and principles or on their own initiative and authority. On the whole, people do not make vocational decisions in terms of managerial and supervisory levels of the fields of their choice. It may be expected rather that they will grow into these levels on the basis of work experience and indications of leadership capacities which develop on the job. However, there are no informal criteria and no measurable attributes which are used consistently in promoting people to managerial levels of activities. More and more some areas of industry are recruiting for managerial talent and providing programs for executive development. Managerial work, although traditionally identified with such personal qualities as leadership and initiative, is becoming increasingly dependent on organized knowledge in such diverse fields as finance, distribution, personnel, and public relations, and on technical information about the particular products or services which are managed by the worker.

Managerial functions extend from executive levels down through direct supervision. The demands on the top executive and the front-line supervisor are quite different. Much has been written about the requirements which the executive-manager faces - how his whole being "--mind, will, emotion--" is called for, how he lives a life in which there is no break between work and "free time," how the life of his organization becomes the major substance of his own life. When the executive is recruited for his job, it is typical that he cannot draw back from divulging the whole fabric of his life, his way of thinking, his affections and habits. The manager-executive operates as a generalist who may have administrative control over technical specialties which he finds incomprehensible. He may see the role of the specialist as narrow and out of touch with the really tough problems which must be solved. He is constantly involved with calculating the use which can be made of persons and facilities of an organization to accomplish its goals. In contrast to this, as management approaches the supervisory levels, the direct interplay of the personality of the supervisor and workers assumes chief importance. The supervisor is the transmitter of decisions rather than the maker of them. The main requirement is the skill of the supervisory person in obtaining from each individual the best performance of which he is capable and in fostering effective relationships and division of duties among a group of workers who function as a team.

MANAGERIAL. Planning, coordinating, and supervising an organization or work unit activity, either in accordance with specified policies and principles, or on one's own initiative and authority.

Explore DOT OGA's: 169 Occupations in Administrative Specialization, n.e.c.;
180 Agriculture, Forestry, and Fishing Industry Managers and Officials;
181 Mining Industry Managers and Officials;
182 Construction Industry Managers and Officials;
183 Manufacturing Industry Managers and Officials;
184 Transportation, Communication, and Utilities Industry Managers and Officials;
185 Wholesale and Retail Trade Managers and Officials;
186 Finance, Insurance, and Real Estate Managers and Officials;
187 Service Industry Managers and Officials;
188 Public Administration Managers and Officials;
189 Miscellaneous Managers and Officials

Related Career Possibilities: Any groupings of occupations which provide entry possibilities to the managerial levels listed above.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Note: On the whole, people do not make vocational decisions in terms of managerial and supervisory levels of the fields of their choice. It may be expected rather that they will grow into these levels on the basis of work experience and indications of leadership capacities which develop on the job. The courses included here are restricted to those which relate to management, supervision, and organization as such. Courses which relate to a particular job skill are listed with the field of work.

Budgeting, Conference Leadership, Decision Making, Employee-Employer Relations, Employee Training and Development, Executive Leadership, Foremanship, Grievance Procedure, Industrial Relations, Institutional Management, Labor Relations, Line and Staff, Management, Management Analysis, Management Communication, Management Development, Management Engineering, Modern Supervisory Practice, Office Management, Operations Research, Organizational Structure, Organization and Methods, Organization and Planning, Patterns of Organization, Personnel Management, Personnel Problems, Policy Formulation, Principles of Human Relations, Program Planning, Public Speaking, Recruitment and Dismissal, Report Writing, Safety, Selection and Training, Staff Development, Supervision, Team Leadership, Techniques of Organization, Wage and Salary Administration, Work Standards and Work Measurement.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): "Self-starting" capacity, i.e., able to see what needs to be done and assume initiative in planning for future. Liking for responsibility. Good judgment in evaluating the performance and capacities of others. High standards of fairness. Skill in winning cooperation of others. For supervisory levels, particularly, ability to select, assign, and train personnel and to plan, direct, and evaluate their work. For higher managerial levels, emphasis is upon capacity to formulate policy and organize programs.

RELATED LEISURE PURSUITS: Leadership and organizing capacity demonstrated in relation to any activity. Student government leadership. Offices held and projects initiated, or civic and social activities requiring the planning of work and the execution of activities cooperatively with others. Community project organizing or chairmanship of community projects. Junior governing activities, e.g., Jr. Chamber of Commerce. Captainship of athletic team or other type of athletic management. Management of school enterprises or part-time private enterprises. Civil organization leadership, e.g., scouts, reserves, etc. Social group managing, e.g., outings, dances, etc. Hobbies involving periodic planning, e.g., fraternity or sorority programs for year. Church leadership in such activities as building fund, young people's programs, decorations committees, charity drives, or serving as program director for special events.

ILLUSTRATIVE TEMPERAMENT ROLES: Dominance in grasping broad aspects of an enterprise, visualizing aims, and planning for their accomplishment. Versatility in organizing, coordinating, and keeping in touch with multiple phases of a program. Adaptability to dealing with people from the standpoint of evaluating their work performance and in handling them in group situations in a manner to arouse their constructive attitudes of enthusiasm, loyalty, responsibility, cooperation, and pride and interest in the value of their work to an organization.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Prestige deriving from the status values associated with managerial levels of work - increased opportunity to achieve community standing and association with prominent persons. Business Contact for many managerial jobs in which the worker must handle a wide range of business relationships in a way to promote and maintain public good-will.

THE ARTS

Visual Arts and Architecture

Artistic Work, Two-Dimensional
Shaping (Sculpture) and Kinetic Art
Artistic Arranging
Architecture and Landscaping
Artistic Photography

Musical Art

Musical Directing
Musical Composing
Musical Work, Vocal
Musical Work, Instrumental

Literary Art and Related

Creative Writing
Copy Writing
Journalistic Writing (Editing & Reporting, Press, TV, Radio)
Translating and Interpreting
Technical Writing

Performing Arts and Public Appearance Work

Public Speaking (Lecturing, TV and Radio Announcing)
Dramatic Performing (Acting)
Models and Stand-ins
Rhythmic Performing (Dancing)
Sports and Athletic Performing
Astrology and Soothsaying
Entertainment Work, Variety
Entertainment Work, Promotional and Display

The question, "Who is an artist?" may be answered that he is one who develops conceptions into artistic forms. Artistic forms are the products of diverse activities; there are action arts and contemplative arts. All arts have in common a requirement that the worker possess the special faculty of recognizing, judging, and creating composition. Composition has nothing to do with any subject or meaning, but it is a universal quality of painting, sculpture, music, poetry, architecture, and other arts. It is the almost undefinable something which holds the elements of a structure -- whether or words or stone -- together into an inseparable unit, so that the onlooker has the feeling that nothing may be taken out, shifted, or cut off without ruining the entire work. This faculty seems to rest on a complex psycho-neurological basis, which has not been successfully analyzed into component aptitudes and traits.

The artistic creation, more than any other human endeavor, begins with nothing. Its fountainhead is mood more than conscious calculation. It is not subject to checks other than its internal unity of composition. It has its own being and expresses its own truth. This contrasts with the scientific creation in that the latter involves theories and models which are suggested by facts. It has been said that the scientist creates new ways of knowing while the artist creates new ways of feeling.

Accomplishment in the arts seems to present a paradox in its dependence upon intuitive, spontaneous mental process and simultaneous requirements of perseverance, iron discipline, and use of deliberate techniques. Many areas of art require the ability to master a complex symbol or notation system, as in music or choreography.

The artist may be highly creative, seeking only his self-fulfillment, e.g., Van Gogh painting the cosmos of his fancy or Robert Frost serving as the catalyst whereby his "snowy evening" became a perfect art form. On the other hand, the artist's creativity may be "for hire" when he carries out a commission, whether a scenario for a motion picture, a magazine cover, or the musical score for a Broadway production.

The field treated here relates to occupations in what are known as fine and commercial visual arts, architecture, music, literary work of all kinds including journalism and advertising, choreographic art and dancing, dramatics, lecturing and similar public appearance work, and entertainment work such as sports, acrobatics, and magic.

Included are not only creators and interpreters, but many occupations which are art-related. These latter often provide opportunity for an artistic talent to "hitchhike" on another activity as is the case with the scientific illustrator or the music teachers who meet widespread needs in our society by teaching the large segment of the population that studies music as a cultural rather than career subject.

THE ARTS - COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Several capacities relate to what is known as "artistic talent."

First, capacity for inner experience, openness to feeling and emotion, sensitive perception of the outer world, heightened sensory awareness, as a tendency to see through intuition the deeper meanings and possibilities of what the senses behold and the facts which the mind encounters.

Second, capacity to be moved by a particular art medium, e.g., poetry, music, painting.

Third, an urge to express ideas and feelings through the particular art medium.

Fourth, ability to "see" i.e., recognize esthetic excellence, whether it occurs by design or chance, to take advantage of the "lucky" accident, to have the critical faculty to know when artistry has been accomplished.

Fifth, unusual visual, auditory, or other form of memory and capacity to visualize in the mode of art, e.g., tonal images, line and color images, movement patterns in time.

Sixth, ability to master the symbol language of the art, e.g., musical notation, poetic meter, choreographic Labanotation.

Seventh, the motor abilities whereby the mental and emotional conceptions may be executed, e.g., "the knowledge in the hand" which enables the painter to "put down" his visions on canvas or the rigorous coordinations by means of which the ballet dancer performs a multiple pirouette.

Eighth, the sensory capacities to make judgments of such things as the pitch of sound and subtle color relationships OR the "inner ear" which senses the "rightness" of the sonorous image in music, the rhythm in poetry, or the inflections and facial mobilities which express anger, sadness, humor, bravado, or tenderness in a dramatic portrayal.

Ninth, mastery of technique whereby the artistic conceptions are shaped into forms of esthetic excellence. Such mastery usually follows a course wherein the artist first exhibits a bent towards a particular art medium, studies the techniques which discipline the form of art, and achieves a final stage of artistic development in which the discipline of form and the intuitive conceptions express themselves as a single process, each modifying the other. In this stage of full-blown development it might be said that the poet "thinks" according to the laws of the sonnet and in iambic pentameter, the composer "thinks" in musical notation and thematic relationships; the choreographer "thinks" in the strict code of movement and posture of the ballet. The particular esthetic language serves as the vehicle whereby the artist shapes new content and new syntheses of relationships.

ILLUSTRATIVE TEMPERAMENT ROLES: Subjective as the artistic creation is profoundly the unique expression of a particular personality; only Shakespeare would and could have written Hamlet; no two acting interpretations of Hamlet have been facsimiles. Valuative in that the artist works intuitively and empirically, feeling his way towards his goals. Rigorous in the striving for perfection by hard work and rules, which may be no less exacting for the artistic composition than for the PHYSICIST measuring the charge of the electron.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Abstract, Creative in the urge and need to discover unifying principles that order and integrate multiplicity AND in the continual search for new ways of viewing reality and expressing it in dimensions not perceived before. Peop and Communication of Ideas because art is the supreme medium for conveying experience to others.

VISUAL ARTS AND ARCHITECTURE (GENERAL FIELD DESCRIPTION)

The mode of this art is visual experience, involving the creation of spatial forms that unify colors, lines, shapes, planes, textures, space, light, and shade into entities that express meaning and feeling or are esthetically satisfying as decor. In many aspects of the work, especially architecture, the worker must be technically competent to deal with structural as well as artistic form.

Visual arts are usually thought of in terms of fine and commercial art. Fine art is that which is created for its own sake, produced because the artist feels compelled to express, in his own time and in his own way, esthetic visions or intuitive inner experiences which are little premeditated. Such an artist often is not a cog in the occupational world at all. His work may never amount to anything. After he is dead, recognition may come, and his work bring millions. Or yet again, his art may catch the imagination of the public while he lives, and he may become fabulously wealthy and famous. Whatever the mysterious ingredient that makes a Rembrandt or a Cezanne, or a Picasso in our own day, it is not explainable by formula.

Commercial art is literally any work done with the deliberate purpose of selling. A commercial artist has to produce whatever he is hired to do. He may be given specifications in regard to shape, size, subject, style, color, delivery date, and other details. He may be required to alter his work a score of times to please his client. Although the fine artist may be temperamental, odd, and Bohemian, the commercial artist must be competent and businesslike, adaptable to requirements and limitations, to pleasing his client rather than himself.

However, fine art and commercial art are not to be thought of as mutually exclusive. Much art is a compromise and although it is accomplished on commission, it may still possess the esthetic excellence of fine art. Fine art produced on commission actually has a history going back to Michelangelo. Moreover, the terms of art on commission vary so widely that the artist is frequently given enough leeway that the art form produced is almost entirely an expression of his personal viewpoint. Many artists engage in the production of fine art and commercial art simultaneously or at different stages of their careers.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: All courses which are concerned with principles of design and color, line, shape, and texture.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The artist in this field is characterized by his ability to organize visual impressions and to articulate visual ideas. He engages in a continual process of visual study and evaluation and uses visual judgments to accomplish his ends. He works directly with tangible things and thinks in terms of graphic and plastic properties. His customary symbols are not words but ones which derive from form and color and visual order and relationships. He is greatly concerned with proportion and arrangement and he possesses unusual awareness of the patterns and rhythms in the world around. He has heightened sensuous and emotional responses to color and form. He "sees" the physical world in more ways than the ordinary person: endows it with moods and harmonies; constantly transforms reality into new shapes and colors. He seems to have instinctive recognition of symmetry and balance and what sometimes seems to be a mysterious capacity to order innumerable details into harmonious wholes. His insights enable him to exploit the tensions of complex asymmetries to achieve the new, to produce esthetic experience not lived before.

RELATED LEISURE PURSUITS: Membership in art societies, local and national. Attending art workshops. Winning awards in juried exhibitions of recognized caliber. Prizes and honorable mentions at art exhibits. Staging a one-man show with favorable judgments by critics and dealers. Visiting museums, galleries, private collections. Preparing portfolio of samples of work.

ILLUSTRATIVE TEMPERAMENT ROLES: The ARTIST is <u>subjective</u> in that he produces what HE sees. This is in contrast with the SCIENTIST, who works towards a public reality. The ARTIST works towards his own reality, his unique vision of the world. The ARTIST is <u>valuative</u> because in design it is not possible to come up with exact, statistically proven, mathematically perfect, and rationally thought out solutions. Much that is done is accomplished experimentally by trying and seeing -- testing by individual judgment -- involving feeling and thinking rather than instrumental measurement, or computation, or verbal argument. The REPRESENTATIONAL ARTIST is <u>rigorous</u> in that he works to achieve precision in the application of technique, e.g., when a geometrically exact perspective is employed, involving working by rules, and drawing and redrawing with increasing precision. The COMMERCIAL ARTIST may need the capacity for <u>influencing</u> in persuading clients to commission an art work or plan an artistic improvement.

ILLUSTRATIVE INTEREST INVOLVEMENTS: <u>Abstract, Creative</u> in discovering unusual space and form relationships, strange but "right" color contrasts, new combinations of color dissonances and consonances. <u>People and Communication of Ideas</u> as the COMMERCIAL ARTIST endowing commodities with dream-like qualities which motivate consumers to buy.

INTERESTS - VARIABLE: <u>Business Contact</u> for those jobs in VISUAL ART AND ARCHITECTURE in which the ARTIST must deal with a client, understand his wants, and explain to him the esthetic results of his wishes and specifications.

VISUAL ARTS, TWO-DIMENSIONAL. Work, training, and leisure pursuits in which line, shape, form, color, and texture are used to portray representations or conceptions on surfaces through media such as: oil paints, water color, pencil, charcoal, lithographic crayon, pastels, pen and ink, dry brush and wet brush with ink, wash, and collage. This art field is very diversified and includes not only fine art but many branches of applied art, including commercial and advertising art, industrial design, scientific and journalistic illustrating, cartooning, and visual aids.

Explore DOT OGA's: 141 Commercial Artists; 144 Painters and Related Occupations; 149 Occupations in Art, n.e.c.

Related Career Possibilities: 142 Designers; 143 Photographers; 148 Sculptors; 164 Advertising Management; 97 Graphic Arts; 74 Painting, Decorating and Related; 185 Wholesale and Retail Trade Managers and Officials; 773 Occupations in Coloring and Decorating Brick and Related

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: In high school, an art major, if possible. English, mathematics, history, and science important. College and university art departments grant B.F.A., Bachelor of Fine Arts, and M.F.A., Master of Fine Arts. Such degrees are usually required to teach art. The verbally facile profit from an academic art program. Professional art schools usually offer a diploma or a designation as Associate in Arts upon approval of a Professional Portfolio of student's work. Usually such graduates serve a three to five year apprenticeship before becoming productive artists. The visually perceptive with strong manual skills, seeking employment in commercial art, often choose a professional art school. The self-taught innovator is not uncommon in the fine arts. Most important specializations: Commercial Art, Cartooning, Fine Art, Layout, Illustrating, Fashion Art, Landscape, Portraiture, TV Graphic Art, Painting.

RELATED COURSE AREAS: Art school first year usually covers perspective, color theory, composition, anatomy, design and drawing; second year: layout lettering, illustration and specialized subjects. Related Courses: Advertising Layout, Anatomy, Animal Drawing, Art Education, Art History, Color Theory, Composition, Cartooning, Design, Draperies and Textiles, Etching, Fashion Drawing, Form and Shading, Graphic Art Production, Human Figure, Illustration, Industrial Arts Design, Inking, Landscapes and Trees, Lettering, Life Drawing, Light and Shadow, Media of Rendering, Pastels, Perspective, Portfolio Specialization, Portraiture, Posters, Scientific Drawing, Still Life, TV Graphic Art, Water Color.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Art forms are regarded as objective or non-objective, representational or abstract, figurative or non-figurative, i.e., depicting recognizable objects versus the creation of forms which do not imitate the real world. In between is the art takeoff on the real world, distorted to convey the artist's special view. These various art approaches make considerably different demands in the way of training, temperament, and aptitude. Representational art requires a masterful sense of perspective, outstanding drawing talent, the ability to think through and around an object, and often a temperament for rational planning. Abstract art may make no use of perspective at all. Some forms depend heavily upon chance and require an artist with the temperament to be aware of and make use of the "lucky accident." Established ways of brushing paint are often abandoned. A palette knife or trowel may be used to twist the paint into spontaneous shapes without recognizable content. Paint may be thrown, squirted, dripped, poured, piled, or slashed. Other art forms employ geometric abstraction. Rulers and compasses are used to create precise circles,

disks, and rings. In collage, which is a method of pasting materials on surfaces to form pictures or compositions, the forms may be cut with utmost precision. The decorative representational has its greatest popularity in the mass market while the prestige art collectors seek out the avant-garde forms. In technical art, the artist must be superb in draftsmanship and perspective to produce such things as perspective drawings of engines, anatomical sketches, etc.

RELATED LEISURE PURSUITS: Pursuits as an individual or member of a group which involve creative art activities. Lively interest in times and works of great artists; reading art periodicals. Amateur painting with oils and water colors. Copying pictures; drawing from nature--anything and everything which can be seen. Sketching objects as seen through a microscope or telescope. Drawing profiles of friends; making silhouettes. Doodling abstract designs while listening to lectures, TV, etc. Inventing eye catching advertisements. Making posters to advertise church or club activities; programs and place cards for social events; illustrating jokes and stories or making up cartoons for school or club paper. Animation cartooning. Illustrating yearbook for school. Designing own greeting cards. Cutting and pasting paper decorations. Teaching young children to draw. Volunteer art teaching. Designing fancy glassware. Etching monograms and mottoes. Lithographing. Creating art metalwork layouts; linoleum block printing; or decorative geometric figures. Drawing plans for ornamental furniture. Originating embroidery patterns. Designing wallpaper. Making mezzo tints; burning designs; sketching in charcoal or crayon; experimenting with pen and ink drawings. Heraldry; painting coats of arms. Participating in or putting on art exhibitions. Developing own art portfolio.

ILLUSTRATIVE TEMPERAMENT ROLES: Subjectivity or self-expression is needed in all forms of art, even the technical. The artist has a unique opportunity to impress his viewpoint of life upon his work, and in fact, his work is usually very much a product of his personal leanings. He is valuative in being guided by his own sense of beauty and harmony. An example is the STAINED GLASS WINDOW DESIGNER, who may be given a commission to fit a design to the architecture of an ultramodern museum. His instructions are likely to be in the glittering generalities of words. He must translate these into the definitiveness of pictorial needs with no criterion except his esthetic judgment. Influencing capacity is important in commercial art which is designed to invest ordinary consumer goods with ego-appealing qualities to make them irresistable to the prospective buyer. The artist may be rigorous in his pursuit of perfectionist standards which he himself visualizes and sets for himself. The COMMERCIAL ARTIST may need to be sufficiently gregarious to function successfully as the member of a team. The artist's work often requires versatility, as for instance in turning from the poetic dream approach in illustrating a symphonic record album to the practical images required by the rubber tire production industry.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Abstract, Creative as the AVANT-GARDE PAINTER in his destruction of all heretofore known pictorial means and the creation of entirely new ones OR the startling, sensitive magic with which a COMMERCIAL ARTIST transforms a telephone pole, mailman, or fireplug into more than ordinary sights. People and Communication of Ideas in the use of visual forms and symbols to produce emotional and esthetic responses. Prestige in that the artist, if successful, has the satisfaction of knowing that the unique creations of his imagination may be much admired and sought after. Business Contact for the COMMERCIAL ARTIST who must be astute in the values of the market place, know past and present markets and try to forecast the future, and on occasion be a politician to achieve success in vending his wares.

SHAPING (SCULPTURE) AND KINETIC ART. Work, training, and leisure pursuits concerned with those aspects of visual art in which representations or conceptions are expressed by shaping three-dimensional forms or by motion sculpture constructions. Sculptured or shaped objects include statues or other figures, friezes, decorative objects, ceramics, fine wares of many kinds, dolls, puppets and marionettes, carnival and holiday masks, toy figures, and inflated balloon characters. Kinetic art is a form of abstract sculpture, which aims to depict movement, i.e., kinetic rather than static rhythms, and it employs as a medium, various kinds of mobiles which combine form, movement, line, color, time, and sometimes including sound, into ever-changing images. In the commercial arts, the sculpturing which underlies the production of many everyday items may have highly original qualities, but it is geared to the public taste. Much commercial sculpture is mass-produced in many materials. Sculptures in the fine arts may be representational or they may be abstractions, expressing only rhythm and balance.

Explore DOT OGA's: 148 Sculptors; 141 Commercial Artists; 149 Occupations in Art, n.e.c.

Related Career Possibilities: 142 Designers; 144 Painting and Related; 97 Graphic Arts; 102 Museum Curators and Related; 109 Occupations, Museum, Library, and Archival, n.e.c.; 76 Occupations in Fabrication and Repair of Wood Products; 771 Stone Cutters and Carvers; 774 Occupations in Fabrication and Repair of Pottery and Porcelain; 777 Model, Pattern and Mold Making; 298 Display Men and Window Trimmers; 199.281 Taxidermy

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: In high school, an art major, if possible. English, mathematics, history, and science important. College and university art departments grant B.F.A., Bachelor of Fine Arts and M.F.A., Master of Fine Arts. Such degrees are usually required to teach art. The verbally facile profit from an academic art program. Professional art schools usually offer a diploma.

RELATED COURSE AREAS: Anatomy for Sculptors, Baroque Art, Ceramics, Clay and Pottery Modeling, Design of Monuments, Dioramas, Egyptian Art, Gothic Sculpture, Greek Art, History of Sculpture, Kinetic Art, Mobiles, Modeling, Modern Sculpture, Museum Techniques, Papier-Mache, Perspective, Plaster-of-Paris Sculpture, Sculpture Materials, Sculpturing Tools, Welding.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Shape, form, mass, body, as expressed in three-dimensional media, are the special province of the sculpturing arts. Drawing talent and color sense are not primary. The ability to visualize the interplay of form and shape in space, coupled with the manual skill required to fashion such forms out of a material, is the heart of sculpturing aptitude. Much sculpture requires also the physical strength to alter very hard substances with chisels or other tools.

The processes and evolutions through which finished sculptures go may be very complex. Form may be achieved in rigid substances by chiseling or hammering. The finished sculpture may also be the original. Much sculpture is first hand shaped in such plastic materials as wax, plaster, and rubber. It may then be cast into bronze or cut from marble or similar. Welded iron and intricate fitted wood sculptures require quite different techniques. Sculpture mediums are marble, stone, wood, metals, terra-cotta, brass, plastics, bronze, ceramics, aluminum, steel,

iron, lead, copper, concrete, and in fact, modern sculpture constantly seeks to make use of hitherto unthinkable materials. The avant-garde is making use of paper, "found objects" (frequently junk), and has devised impellers to transform water into sculptural mobiles.

Knowledge of material is of supreme importance to the sculptor. His skill and taste in utilizing the qualities of materials are basic to his success. When he looks at a chunk of matter he sees in it, form, and the work required to bring the form out of the unshaped mass. As he works he holds in his mind the image he wishes to shape and judges where and what he must remove or reshape to lay bare the image he visualizes. If he is chiseling a head of Abraham Lincoln, he constantly sees before him in the featureless marble the Lincoln head which his skilled hands have the power to bring into tangible reality.

Sculpturing is not light work like painting and drawing. The dream often may not be achieved except by energy-consuming skills such as whittling, abrading, wearing down with some tool, or chiseling. The sculptor may hammer, and beat, and drill. Heavy tools like crowbars and wedges are sometimes needed. Sculptors have been known to break their wrists and other bones in the strenuous actions required to accomplish some forms of sculpture. The sculptor uses measuring tools such as levels and carpenter's angles. Where planes change, he must make precise measurements. Whether the sculpture is colossally proportioned as the heroic figures fashioned with massive equipment by Gutzon Borglum out of a granite mountainside; or puppet figures constructed to move and intermove with frantic jerky gestures--they have in common the fact that they convey through form and texture the thought of the SCULPTOR.

RELATED LEISURE PURSUITS: Pursuits as an individual or member of a group which involve art activities, especially the plastic and shaping arts. Architectural sculpture, clay modeling, soap sculpture. Making ceramic and pottery ashtrays, vases, etc. Fruit and other wax modeling. Whittling boats or small statues. Carving small objects for knick knack shelves; making fancy signs and totem poles. Modeling clay models of friends. Developing objects from basic materials such as straw, needles, paper, etc. Carving, plastic work, papier-mache modeling, plaster-of-Paris sculptures. Doll making, doll-house making. Carving ivory and bone. Making puppets. Plaster casting. Doing hammered metal or aluminum work. Making masks and costumes. Building "show-off" snowmen. Designing mobile sculptures or contriving ingenious motorized kinetic sculptures.

ILLUSTRATIVE TEMPERAMENT ROLES: Subjectivity in that the SCULPTOR can reveal, in his personal idiom, what he has to say about the world he lives in (e.g., his representation of the tragic destruction of a bird in mid-air, exalted pose of the Madonna, fantastic appearance of a machine from outer space, or perhaps a monumental and baffling abstraction). Valuative in the SCULPTOR's constant engagement in qualitative thinking, e.g., esthetic effects to be derived from the grain and color of wood and stone, the sheen and mattness of metals, rough texture of terracotta, translucency of plastics, shininess of brass, or the patina of copper AND in the almost "sixth" sense which the SCULPTOR develops whereby he detects the sugary spot in the limestone or the internal flaw in the slab of marble, so that he does not waste great effort and inspiration on worthless material. Rigorous in perfectionist attitude towards work.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Abstract, Creative as, e.g., in the carefully balanced masses of a welded iron abstract which may remind the onlooker of the rhythm and rhymes of a poem OR the dramatically convoluted forms of an aluminum construction OR as the CERAMIC ARTIST developing new formulas and techniques for distinctive colors, glazes, and textures. People and Communication of Ideas in the uncanny manner in which sculptural form gets its message across, as the Etruscans communicate with modern man, despite the intervening thousands of years and differences of language and culture. Prestige in that the SCULPTOR is supremely the artist whose work lives just as he left it, expressing his idea of the age in which he worked and lived.

ARTISTIC ARRANGING. Work, training, and leisure pursuits in which artistic compositions result from the arranging of objects, materials, texture, lighting, and space. Many jobs require high levels of esthetic creativity, but not necessarily drawing ability. Typical activities are interior and display decorating, floral arranging, stage scenery designing, and clothes styling. Another activity is the artistic arranging of food which may be the designing of an elaborate cake or the color scheme and food arrangement of large dining events.

Explore DOT OGA's: 141 Commercial Artists; 142 Designers; 149 Occupations in Art, n.e.c.; 298 Display Work

Related Career Possibilities: 164 Advertising Management; 97 Graphic Arts; 332 Hairdressers and Cosmetologists; 333 Make-up Occupations; 299 Merchandising Occupations Except Salesmen, n.e.c.; 102 Museum Curators and Related; 109 Occupations, Museum, Library and Archival, n.e.c.; 185 Wholesale and Retail Trade Managers and Officials; 782 Handsewing, Mending, Embroidering, Knitting and Related; 783 Furworking; 785 Tailoring and Dressmaking; 31 Food and Beverage Preparation

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: A high school art major is desirable. Some colleges and universities offer related degrees but most commonly people enter the field after obtaining a diploma from a technical art school. General Course Areas: Applied Arts (art appreciation, crafts, color, design, drawing, perspective, sketching), Design (balance, harmony, proportion, unity), History of Art, Visual Arts. Specific to Decorative Arts: Accessories (glass, pottery, etc.), Collector's Items, Color Theories and Systems, Commercial Interiors, Composition in Flower Arranging Contemporary Interiors, Corsages, Floor Coverings and Tapestries, Floral Arrangement, Floor and Wall Treatments, Foliage Effects, Framing and Hanging Pictures, Funeral Designs, Home Furnishings, Interior Decoration, Lighting and Windows, Merchandise Display, Paints, Periods and Styles, Relation of Architecture to Interior Decoration, Showcase and Window Arranging, Stagecraft, Stage Design, Stage Lighting, Terraces and Patios, Textiles, Traditional Interiors, Window Display. Specific for Clothes Styling Arts: Anatomy, Applied Dress Design, Basic Millinery, Clothing Construction, Costume Design and Fashion, Draping, Fashion Economics, Fashion Sketching, History of Costume, Millinery Designing, Patternmaking and Grading, Sewing Details, Theatrical Make-up.

RELATED LEISURE PURSUITS: Pursuits as an individual or member of a group involving art activities, especially the decorative and styling arts. Floral designing; entering exhibits of floral arrangements in neighborhood garden club shows. Designing clothes. Reconstructing medieval or other historical costumes. Making costumes from crepe paper; dressing dolls for gifts or for sale at fairs, bazaars. Making own hats and clothes; altering commercial patterns to suit own individuality; designing new types of clothes; embroidering. Studying color harmony in dress. Sketching styles. Avid reading of style, decorating, or stage craft magazines. Visiting fashion shows. Visiting model houses, interiors, fine collections. Volunteer decorating or refurnishing of home, club, or school. Doing stage sets and party decorations. Arranging flowers, trophies, china and glass, books. Composing massed picture effects. Working out solutions to remodeling and modernization problems. Studying photography and drawings of styles and interiors. Refinishing antique or second-hand furniture. Choosing and arranging furniture; decorating the home; making lampshades; framing pictures. Being on church or club decorating committee, decorating for parties, bazaars, etc. Making plaques, ashtrays, etc., from mosaic tiles. Making party favors and table decorations. Helping with scenery for a local "little theater" group; experimenting with lighting and stage effects.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Understanding of form, proportion, composition, consistency, restraint, color harmony. Personable in manner and appearance; understand accepted standards of good taste. Often needed, capacity for hard work, for thriving in an atmosphere that is hard-driving and competitive, in which trying deadlines must be met, and adjustment made to the vagaries of clients not sure of their own minds. Rewarding to those achieving satisfaction in working with the beautiful and artistic. Especially for decorative arts: Ability to plan, design, and execute structural interiors and their furnishings and to supervise the various arts and crafts essential to their completion. In stage design, this may be the planning and designing of settings and backgrounds to convey visual impressions required by story; in showcase and window arranging, the display of merchandise to attract customer attention; in floral designing, emphasis upon the arrangement of flowers and plants. Knowledge of history and the furnishings and costumes of its periods. Ability to plan from the viewpoint of economy, comfort, convenience, and appearance. Knowledge of textiles, woods, metals, papers, plasters, paints, furniture, wallpaper, accessories; lighting (direct and indirect) and its effect on colors; harmonious, analogous, and complementary color relationships and effects; composition in flower arranging; economics of cost and labor. Be able to read blueprints, make scaled floor plans, figure dimensions. Especially for styling arts: Style sense, appreciation of clothes. Know historic and contemporary fashion. Interpret trends and forecast fashions. Appraise styles in terms of their smartness and individuality. Interpret ideas by sketching with pencil, pen, wash, water color, tempera. Know lines, fabrics, color combinations; principles of clothing construction; patternmaking; and supervision of sample garment making. Ability to diagnose personalities from the viewpoint of style. For hat designing, basics of millinery and ability to visualize hats in relation to faces and figures.

ILLUSTRATIVE TEMPERAMENT ROLES: Subjective as the INTERIOR DESIGNER relating the emotional forces of color to his purpose, e.g., moody blue, hot red, or purple to cast a magic spell OR the FLORAL DECORATOR aiming at the dramatic by piling flowers in careless profusion or tenderly twisting them to achieve a haunting effect. Valuative as the WINDOW TRIMMER juggling manikins, props, and lighting effects to achieve an asymmetrical balance that is "right" OR as the sureness and sharpness of fashion sensitivity in a HAT DESIGNER who forecasts fashions and keeps a fashion house's reputation for style on a high level. Influencing as the SHOW-CASE TRIMMER arranging displays to attract customers OR the DECORATOR's constant involvement with selling ideas. Gregarious in close association with clients and other people. Versatile as the INTERIOR DECORATOR planning the large country place, the cottage, the townhouse, the apartment - each with its own atmosphere and in keeping with its own setting. Rigorous in taking great pains to plan details, leaving nothing to chance.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Abstract, Creative as the CHRISTMAS WINDOW DESIGNER combining music, colored spotlights, and moving kaleidoscopic forms so that motion and light mold into an integrated art form OR the STAGE-SET DESIGNER developing through props, scenery, chorus formations, and interweaving spotlights, images that race, slide, and interlock in harmonious, multicolored patterns. People and Communication of Ideas as the MOTION PICTURE SET DRESSER communicating an atmosphere, as the philosophical through the use of abstracts, sophistication with primitive objects, or stylized formality by means of Japanese art. Prestige in that the "conversation pieces" in many luxury homes which owners exhibit as symbols of good taste and status are the work of DECORATORS AND as the CLOTHES STYLIST designing for celebrities OR the COSTUMER creating gowns for a multimillion dollar movie.

ARCHITECTURE AND LANDSCAPING. Work, training, and leisure pursuits that relate to the design of structures and landscapes in a way to fulfill both esthetic and functional requirements. Architecture is related on the one hand to other professional work in which esthetic considerations are important: city and regional planning, motion picture sets, stage design, interior decorating, and archaeology. Conversely, it is related to structural and other types of engineering which involve construction methods and technical skill in handling complex physical forces. However, it might be said that the engineer is chiefly concerned with making the building stand up whereas the architect designs its "looks" and other psychological aspects so that it will please the inhabitants.

Explore DOT OGA's: 001 Architectural Occupations;
019 Occupations in Architecture and Engineering, n.e.c.

Related Career Possibilities: 005 Civil Engineering

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: B.S., B.A., and Ph.D. degrees are available in architecture. All states require licensing. To be admitted to licensing examination, candidate must have training in architectural school plus practical experience, or extended periods (10 years or more) of practical experience. Preferred secondary school preparation includes mathematics, science, social studies, languages, and art.

RELATED COURSE AREAS: Analysis of Architectural Composition, Architect in Society, Architectural Acoustics and Noise Control, Architectural Design, Architectural Drafting; Architectural Materials, Architectural Mathematics, Architectural Specifications, Architectural Rendering, Architecture as Structure and as Human Environment, Building Economics, Color and Form, Community Planning, Contemporary Structures, Drawing, Painting, and Design; Decorative Arts and Interiors, Engineering Mathematics, Environmental Control and Mechanical Equipment, Estimating, Elements of Modern Buildings, Freehand Drawing, Ground and Water Forms, History of Art and Architecture, Human Ecology, Industrial Camouflage, Landscape Design, Literature of Architectural Theory, Lighting, Landscape Architecture, Land Use Problems, Mechanical Equipment of Buildings, Modern Architecture; Organic Design, Roads, and Walks; Shades and Shadows and Perspective, Site Planning, Structural Design, Statics, Strength of Materials, Structural Analysis, Sculpture for Architects, Visual Arts as Cultural Expression.

RELATED LEISURE PURSUITS: Varied cultural and artistic pastimes. Interest in history and social phenomena. Modelmaking of all kinds which involve close tolerances and artistic excellence: villages, houses, and other structures. Carpentry and masonry hobbies. Designing and building a summer cottage, gazebo, etc. Landscaping the home grounds; laying out gardens, formal and informal. Designing stage settings, interiors, and furniture. Architectural, terrain, or habitat models involving perspective and scale-model construction. Dioramas for exhibit. Visiting art museums and famous architecture.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Architecture is concerned basically with achieving an optimum relationship between people and their environment. Therefore, the ARCHITECT must understand people and comprehend people's problems in terms of their living requirements. This calls for a well-balanced "thinking-feeling" response to the problems he must solve. He must sense man and the times - perhaps a whole social era. He needs to appreciate yesterday's values and be astute in anticipating tomorrow's trends. When he plans and visualizes, he must think in terms of complex "wholes": not only structures and sites, but space, people, and the activities of people; not only of mechanical adequacy, but conditions to which man reacts, as sights, sounds, smells, and the "feel" of surroundings. He must think in terms of human ecology and have fully developed receptivity to the psychological requirements of organic design. In terms of specific abilities, the ARCHITECT needs good visualizing capacity and drawing ability in order to sketch readily and accurately and a good eye for shape and size of things. Must be able to estimate costs.

ILLUSTRATIVE TEMPERAMENT ROLES: Dominant in planning and coordinating plans and specifications of consulting engineers for the structural and mechanical phases of work. Subjective for the pacesetters in the field, in developing their own style, based on their own tastes and ways of thinking and feeling. Versatile in relation to many-sided aspects of work which is synoptic in spanning both the practical and poetic; in multiplicity of structures dealt with - dwellings, museums, churches, factories, hospitals, parks, formal gardens, airports, etc. - AND in being able to visualize and plan in many styles, ranging from traditional to contemporary. Valuative in setting about to achieve the expression of some quality in a structure, (as for example, environmental serenity) when must work towards goal on the basis of feeling for what is "right," not by formulas and equations. Objective is that ARCHITECT must be certain that his buildings adhere to the laws of sound mechanics; otherwise his structures would collapse.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Abstract, Creative in the search for principles of rhythmic unity to achieve integration of structure and space AND in originating new schools of architecture which are indigenous to contemporary culture. People and Communication of Ideas as when the ARCHITECT designs a public building in a manner to project the national image in visual terms. Business Contact in that ARCHITECT is one of the most active participants in the world's transactions. Social Welfare in concern to improve the living conditions of people. Prestige in that names of great architects and landscapers live on as great artists and the sociological and cultural influence of architecture is very great.

ARTISTIC PHOTOGRAPHY. Work, training, and leisure pursuits concerned with those aspects of visual art in which esthetic creativity expresses itself through a medium of photographic composition and employs skilled camera techniques to achieve artistic ends.

Explore DOT OGA's: 143 Photographers

Related Career Possibilities: 149 Occupations in Art, n.e.c.; 97 Graphic Arts

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: B.P.A., Bachelor of Professional Arts. Diploma or certificate from technical schools in such specialties as: Advertising, Audio-Visual, Bridal, Children, Color, Commercial, Fashion Illustration, Magazine, Motion Picture, News Photo-Journalism, Portrait, Sports, Still, Television. Entry may be by serving apprenticeship in photographic studio. Some are self-taught and come up from free lancing or amateur status.

RELATED COURSE AREAS: In high school: Art, Business, Chemistry, English, Physics. Specialized courses: Anatomy, Animating, Art Studies, Basic Design, Color Harmony, Color Theory, Color Photography, Graphic Arts, Motion Picture Editing, Moving Picture Photography, Photo Markets, Photographic Essentials (cameras, photographic equipment, including lenses, film and film speeds, shutters, filters, lights, exposure meters, negative development and retouching, printing, enlarging and toning, photo-chemistry, lighting and background arrangement, photographic optics), Photographic Posing, Pictorial Composition, Projectors, Public Relations, Sound for Motion Pictures, Tape Recording, Television Photography.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Ability to judge the compositional elements of tone, line, mass, and texture in a camera field and relate composition to shape of film. Understand principles of lighting, reflections, high-lighting and shading, strength of colors and their absorption of light. Know camera equipment--lenses, stops, timing, exposure, and color filtering. For fashion photography, anatomy and how to pose figures to display salient points of garment. For portrait photography, how to place subjects and arrange backgrounds. The motion picture photographer must have a sense of proper focus on a sequence of events. Like the choreographer or the musician, he needs a sense of composition in time, in order to capture rhythm in movement. Some photography requires originality in achieving idea-expressing distortion, artistic ends through multiple exposures, suggested motion by fusing and blurring, dramatic emphasis by under or over-exposure, or shift in normal color balance to produce weird or other special effects.

The photographer may work in the decorum of the portrait studio, the hurly-burly of the advertising campaign, the suave atmosphere of the fashion salon, the discipline of the motion picture set, or as a mountain climber to make a scenic movie. If a news photographer, he needs an adventurous spirit, courage and ingenuity to get the picture of the battlefront, the disaster area, the outbreak of revolution. If he is a human interest photographer for one of the picture magazines, he is always on the lookout for the scratch of the head, the quirky expression, or the tense drama of some human situation which may place as first winner in the photo competitions of the year. To get the once-in-a-lifetime picture, he may struggle by foot along a road slick with red mud or make his way through a panicked crowd by effective blocking and tackling. The television cameraman may jounce along in an open truck, in cold, wind, rain, and snow, or wait for hours in the heat and blinding sunlight.

The photographer needs camera skill to put his ideas across but his sense of composition and timing count far more than technique. Photographs may be the result of his spontaneous reaction to what he sees -- his highly developed sense of the "decisive moment" which enables him to catch and communicate the beauty or terror of a given instant. Or they may be the result of his creative vision whereby very deliberately he arranges settings and employs optical trickery to produce "other world" scenes. The photographer may picture with insight but not slant and produce a newsreel or a documentary which are factual and informing. His aim may be to move goods or he may play the role of the social critic; in either case he seeks to communicate ideas and feelings which make effective propaganda. He may see himself as a fine artist and strive to express both the image seen and his own emotional response to it by emphasizing pure form in the way of the abstract painter.

RELATED LEISURE PURSUITS: Photography is called the hobby of millions; the career of thousands. Constant use of the camera as a freelance is invaluable experience. Camera hobbists are often avid readers of photography magazines, members of photography groups, and enthusiastic exhibitors. They collect cameras, scrapbooks of own works, and copies of the works of great photographers. They often build their own darkroom.

ILLUSTRATIVE TEMPERAMENT ROLES: Subjective in the poetic sensitivity which leads the photographer to endow, by creative exposure, scenes with qualities that evoke feelings such as tranquility, solitude, or nostalgia, or capture some mood, e.g., rapt absorption in prayer or wonder on a child's face. Valuative in the selectivity of mind and eye which enables the photographer to snatch the microsecond to get the "right shot," e.g., turmoil of a ballet, ship's stack giving off a puff of rich, black smoke; or the dust, galloping horses, and cowboys in midair at a rodeo. The photographer may need the self-control to perform adequately under stress as when venturing perilously near a burning building to get the tension and color of a big fire OR in photographing some suspenseful event, such as the "splashdown" of a satellite capsule, requiring steady nerves. Effectiveness in dealing with people is often necessary, e.g., the PORTRAIT PHOTOGRAPHER who makes people feel at ease in order to pose them in an interesting or dramatic fashion OR the NEWS PHOTOGRAPHER who must get along with all types of people and handle crowds. Photographers are rigorous in the meticulous rehearsing of camera placement and timing AND in tirelessly seeking the right light to achieve an atmosphere, e.g., fantasy. The ADVERTISING PHOTOGRAPHER plays an influencing role in visualizing and transforming into persuasive pictures the ideas behind an advertising campaign. The photographer is often called upon to work in unfamiliar places and circumstances and to cope with strange and unforeseen situations, involving the need for versatility on his part.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas to reach out through purely visual means and communicate to a viewer an emotion, a thought, or an observation. The photographer may seize with his camera a moment of human tragedy to tear the heart in two; he may bend and distort color to achieve surrealistic effects and heighten a point of view. Abstract, Creative as in achieving a tour de force in contrived effects to produce striking or eye-stopping compositions.

Business Contact for public relations and promotional photography. Prestige for photographers who work to capture the personalities of celebrities or who film events such as diplomatic receptions, theater first nights, society weddings, and international conferences.

MUSICAL ART (GENERAL FIELD DESCRIPTION)

The mode of this art is auditory experience, involving the creation of temporal forms which unify the musical elements of harmony, pitch, rhythm, and melody into entities expressing meaning and feeling OR which take the shape of what is known as absolute music, in which the musical elements are combined into abstract tonal structures concerned only with perfection of form.

Music has been called the art of the "fourth dimension," i.e., time. Musical expression is a prehuman phenomenon and the making of tonal patterns is shared by man and birds. Such tonal patterns seem to have psychological and expressive values that in some inscrutable manner set up emotional responses and imagery connotations in the minds of listeners. What is known as music takes many guises. It may be art, or entertainment, or worship, or recreation.

In Western civilization, the organized art of music rests on a system of tonality comprising selected acoustical facts, i.e., certain sound vibration frequencies and their harmonics. This system has been codified into the elaborate symbol language of musical notation. The art of tonality incorporates a harmonic system which is based upon the esthetic ordering of polyphony, i.e., the simultaneous harmonizing of melodically independent parts. Under this system, which is perhaps the most abstract human invention, barring mathematics, the arrangement of tones is under rigorous control at every instant. Traditional classical music adheres to the strict laws of the system.

In contrast, jazz and much non-Western music may be improvised as the musician performs, rivalling action painting as the least premeditated art.

Music of the fine art type exploits to the limit the nuances of possible harmonic and thematic relationships to produce unbelievably complex sound textures. On the other hand, the music of folk art is pristine and simple. Most popular music depends primarily on melody and rhythm for its effects.

Modern and experimental music in the fine art category may deviate from the harmonic system and be atonic and athemic, emphasizing rhythmic intricacy and novelties of sound combinations over the rational progression of underlying harmonies.

Composers for hundreds of years have worked on technical systems to provide tools for music expression. The materials of music -- notes, chords, melodic intervals -- for musicians are sensations and meanings with which they think and which cannot be connected to words. Composers vary in their approach to the construction of music. Some choose to pursue what they consider to be a closely reasoned and logical procedure, utilizing scientific justification for their methods. Others prefer to rely on the intelligence of the "inner ear" as their guide and take what has been termed the "irrational doorway" to musical creation, contending that their compositions are not cold-bloodedly planned, but the involuntary outcome of exalted states when the aural imagination is fired by inner feelings; sound imagery as bird songs, steel rails clanging, rain dripping, engines throbbing; or by some total effect of nature upon eye and ear.

Music is the art which most frequently combines with another art. It is allied with the dance to produce ballet. Songs, operas, and operettas are a merging of music and poetry. Theme music is a specific form to support dramatic art in its motion picture and television mediums.

As a spare-time activity and a mode of personal expression in religious, social, education and other cultural situations, music probably outranks all other arts in its involvement of the general population.

MUSICAL ART can be subdivided into five distinct activities:

MUSICAL COMPOSING. Creating musical compositions and arranging music for voices or instruments.

MUSICAL DIRECTING. Directing instrumental or vocal music.

MUSICAL WORK, VOCAL. Work involving musical expression by means of the human voice.

MUSICAL WORK, INSTRUMENTAL. Work involving musical expression by means of stringed, percussion, wind, brass, or other musical instruments.

MUSICAL WORK, INSTRUCTIVE. Instructing others in the principles of musical expression.

Explore D.O.T. OGA: 152 Occupations in Music

Related Career Possibilities: 150 Occupations in Dramatics; 151 Occupations in Dancing; 159 Occupations in Entertainment and Recreation, n.e.c.; 09 Occupations in Education; 12 Occupations in Religion and Theology; 130 Freelance Writers; 131 Writers and Editors, Motion Picture, Radio, and Television; 132.088 (Critics); 139 Occupations in Writing, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: In the area of music, degrees through the doctorate are awarded in the fields of education, theory, composition, or musicology. The bachelor's degree in music education is necessary for public school teaching, and advanced degrees for college teaching. An academic or college entrance high school program is advisable.

RELATED COURSE AREAS: All liberal arts courses are considered advantageous to the musician. The musical performer or composer, particularly of classical music, as a Van Cliburn or a Callas, achieves artistic maturity only after prolonged and exacting musical training, usually in a conservatory of music and/or under the private tutoring of a musician of stature. In contrast, in certain areas of musical expression, some performers who are acclaimed the greatest in their field (e.g., Harry Belafonte) achieve their eminence without formal musical training. Many extremely well-trained musicians may never attain the status of "artist," but pursue their craft essentially as a trade. Courses: Accompanying, Administration of Music, Analysis of Musical Form, Appreciation and History of Music, Arranging, Bands, Brass, Cataloging and Classification (Library), Choral Arranging, Choral Technique and Literature, Chromatic Harmony, Church Music, Composition, Conducting, Counterpoint, Curriculum and Instruction in School Music, Development of Music, Diatonic Harmony, Fundamental of Stringed and other Orchestral Instruments, Instrumental Techniques, Instrumentation, Modern Contrapuntal Techniques, Musiciology, Music as an Art and Science, Music in Human Relations, Music in the Elementary School, Notation, Opera, Orchestra, Orchestral Literature, Orchestration, Percussion, Physics of Musical Instruments and Sound, Piano, Principles of Vocal Production, Repertoire, Sociology of Music, Solfeggio, Special Library, Symphony, Theatrical Dialects, Theory of Music, Vocal Techniques, Woodwind Performance.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (CONT'D)

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Like music itself, the musician shows many faces. He may need the mental ability to master one of man's most complex symbol systems, musical notation. His training often spans childhood, adolescence, and several years of maturity. But successful performers in mediums such as gospel, folk, country, jazz, and popular, frequently use mainly an artless "by ear" technique.

The artist in the field--whether thought of as fine or folk art--reacts to the world and life's experiences by thinking musically, has capacity for achieving a heightened state of feeling and expressing it outwardly. He has superior ability to recognize, recall, and reproduce sound differences in terms of their rhythm, timing, pitch, and harmony. The specific knowledges associated with music are: musical notation, key signatures, chord structures, note values, clefs, rhythms and tempos, musical terminology and signs, harmonic theory. Some of the more specific abilities: sight read, memorize, transpose, and improvise musical numbers. Ability to "fake," i.e., play chords "by ear" if necessary. For some music, knowledge of a wide variety of musical forms. Often ability to memorize an entire repertoire.

Some special capabilities are: for VOCALISTS, richness of voice quality, sustained volume of lung capacity. Finger adroitness for INSTRUMENTALISTS. For orchestra leaders, ability to give directions as to tempo, volume, and expression, orally, by baton movements, facial expression and gestures.

The COMPOSER of music may be a solitary figure, a visionary, remote and fitting the artist stereotype. He may also be the gregarious frequenter of Broadway or the country dance TV program. Or perhaps he is a highly articulate musical scholar who is also a university professor. Among his special capacities: Mentally manipulate unheard sound images and imagine tonal patterns. Deep motivation to express ideas in the language of music. Ability to balance combined impressions made by themes, rhythms, tone colors, harmonies, textures, dynamics, developments, contrasts. Rich emotional life to generate the poetic and pictorial ideas which are the basis of music. High degree of critical awareness through which to make esthetic judgments at the time of musical creation.

Musicians tend to see themselves as endowed with a special gift which differentiates them from non-musicians. As they are employed by others, often for the purpose of performing not in terms of their own standards but according to the tastes and wishes of others, sociologists see this as creating conflicts for many performing musicians. More than most pursuits, the occupation of musician creates for its members a different way of life.

MUSICIANS are engaged for performance in concert halls and other establishments and events: television and radio stations, theaters, restaurants and clubs, churches and funeral parlors, fairs and expositions, schools, community centers, recording studios, hotels, weddings, parades, etc. Performers are often subject to constant travel. Work often involves eye strain and is emotionally exhausting.

RELATED LEISURE PURSUITS: Volunteer or paid performances which have resulted in the winning of competitions, scholarships, or other recognition of musical ability by teachers, critics, or established musicians. Original composing of music. Singing or instrumental performance in groups or as soloist for social events, or in school, church, theater, radio or TV, glee club, choir, band, orchestra, concert, recital, choruses, light opera companies. Whistling or learning to play simple musical instruments - ukelele, harmonica, ocarine, recorder, autoharp, bongos. Collecting records; listening to music. Attending music appreciation lectures; going to symphony concerts and following the score. Taking part in informal musical gatherings - "jam sessions," small combos, chamber music groups, e.g., barbershop quartets.

Taking charge of the music in Sunday school, vacation school, nursery school. Making test recordings of "live" musical performances. Doing novelty singing. Vocally or instrumentally improvising an old familiar song. Entering "amateur hours" on radio or TV. Studying the lives of great performers and composers.

ILLUSTRATIVE TEMPERAMENT ROLES: Subjective in that composition and performance are always an exposition of the musician's own personality, an outpouring of his inner mood and particular outlook, e.g., a tragic sense of life; a romantic, fiery, sentimental, or clever turn of mind. Valuative in that the PERFORMER works according to his interpretation of the music, OR makes up a style, as in improvising jazz, developing a particular type of rock and roll, or arranging in own way an old-time gospel hymn. The COMPOSER shapes the products of his creative thought through critical judgments based on perceptivity that is sensuous and emotional in its origin. The CONDUCTOR's performance is colored by subtle nuances of momentary feeling, inspired by sudden insights of public communication. Rigorous in that systematic music requires the mastery of strict forms and demanding techniques which can be achieved only by prolonged periods of practice. PERFORMANCES must be well rehearsed, studiously prepared in advance. COMPOSITION takes place in line with a note-to-note logic of thematic relationships.

TEMPERAMENTS - VARIABLE: There is an element of Submissiveness in the role of some musicians, particularly for symphonic musicians who perform exactly as the CONDUCTOR directs OR the ACCOMPANIST who must unobtrusively follow the soloist. Self-Control is an important aspect of the musician's personality, as for example, the CONCERT SOLOIST who performs alone on the stage where the least mistake would be evident OR the precarious element when the PIANIST in the breathlessly exciting virtuoso performance sets himself a task which implies to the audience that it is possibly beyond his capability of realization. Dominance for the ORCHESTRA CONDUCTOR in complete command of a company of musicians and the complex interweaving of voice and instrumental parts OR the DIRECTOR, MUSIC who organizes the whole music program for an institution. Dealing with or relating to people as the SINGER who lets himself go and shares his feelings with his audience, yet with a sensitivity to their reactions which prevents him from overplaying his role. Influencing for musical performers who are expected to sway audiences with showmanship techniques. Versatility for musicians with a varied repertoire, who may be required to play all types of music from the classics to spirituals and arrangements from flamenco to symphonic.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Abstract, Creative as the CONDUCTOR summing up the complex impressions of a piece of absolute music so that the continuity and flow of the performance result in a unified and total image of the work's essence OR the creative thought processes of the COMPOSER which produce the generative ideas whereby common tones are combined into structures that evoke feelings such as lively joy, peace, exaltation, or intense pain OR suggest images such as drifting mists, boisterous winds, leaves falling, church bells ringing. People and Communication of Ideas in that music--whether composed, interpreted, or improvised--is a sharing with others of experience, a communication of feeling and mood to kindle into life in the hearer the emotional experiences and visions from which the music itself came into being. Prestige in that fame often attends the musician's career: for the great COMPOSER immortality of name and musical thought; for the great PERFORMER, much acclaim and admiration; for the successful POPULAR MUSICIAN, a large "fan" following; for the AVERAGE MUSICIAN, a considerable measure of esteem by audiences and association with people or more than ordinary note.

LITERARY ART AND RELATED (GENERAL FIELD DESCRIPTION)

The mode of this art is language, the most immediate and humble medium used by any of the arts. The mediums of other arts are not part of everyday experience, but literary art is fashioned out of the very same order of knowledge with which people conduct their daily lives, ask people to come in, remark about the weather, order food, mourn the dead, and yell at the dog.

In any occupation he chooses, the person will require a facility with the language. He is not employable without it. Other abilities he can get along without in one kind of job or another. He may get by with very little language ability, perhaps just enough to understand and utter the words of a severely limited vocabulary. Moving up to higher levels of occupations, the person will require greater and greater facility in language usage. Should he aspire to the ministry, teaching, law, dramatics or other profession which depends heavily upon the use of language, he will need literary talent. However, the use of language will be a tool, not the purpose of the work, whether that work is preparing a legal brief, giving a history lecture, or writing a sermon for nationwide delivery over television.

Viewing the usage of language on a continuum, there comes a point when the language itself becomes the point of work. Writing ability then takes over as the qualification for the work. The middle range of the continuum represents a grey area, as in journalism and technical writing, in which in spite of required writing skills, writing per se need not be the overriding interest. However, such work is traditionally considered to be a writing competency.

As the continuum advances towards that end called creative writing, the work of script writers, novelists, and essayists appears. Finally, at the breakoff of the spectrum the poet and poetic dramatist are the most visible examples of what is termed creative writing. Prior to this extreme end of the spectrum, writing was a matter of presenting subject matter with the aid of language; here language becomes a mode which is presented by means of a subject. In the technical, journalistic, and discoursive uses of language, things which are said can be restated and communicated through alternatives in syntax without losing meaning and effect. In literary art at its purest development, language is managed in such a way that what it says can be said in only one way and what is said is lost if restated in any other way. It is along the creative section of the continuum that the use of language becomes literary art. It is in this area that persons with literary ambitions and those with talent and a love of words for their own sake tend to have aspirations and perhaps, potentials.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: All writing courses.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): If writers share any trait, it is caring about words, about the right use of them, and the ability to recognize when they are used well. The good writer uses words freshly; he bends words to unfamiliar but still valid uses. He knows how and when to use the right words for his specific purposes. He knows individual words and their associations much more broadly than can be narrowly known on the basis of a dictionary definition. He has an intuitive sense of the word built up through a consciousness of its use in thousands of contexts. He knows cliches, cheap words, snide words, nasty words, brave words, noble words, gutter and holy words, hip and square words, honest and devious words.

An underlying ability in writing may be revealed by the person's willingness to rework what he writes until he feels it cannot be rewritten to sound any better. It may be grim plodding work but he will endure the self-imposed torture it takes to achieve a professional standard of writing.

Although literary art occupies only a small segment of the continuum of activities which involves the use of language as an essential aspect, the artistic use of language is necessary in a much broader scope of pursuits. Among the main fields of work which employ writers, there is much mobility. The fields themselves differ greatly in their requirements on people, but people themselves are flexible and may very well adjust to widely different writing specializations. Even persons with great literary talent often must earn their livelihood, if they are fortunate enough to earn their living as writers at all, in some of the more mundane writing activities. After many years in more pedestrian writing occupations, they may emerge as creative writers. For example, the 1967 Consultant in Poetry to the Library of Congress, James Dickey, was an "ad man" who put in years of being lyrical about soft drinks before he achieved national prominance as a poet.

RELATED LEISURE PURSUITS: Being editor of school paper or yearbook. Doing odd jobs, or being a volunteer reporter for small town or neighborhood newspaper. Writing greeting card verses; entering poetry contests. Amateur journalism; scene writing, playwriting; compiling bibliographies. Contributing verses, human interest items, jokes, etc., to office bulletin. Writing short stories, magazine "fillers" or articles on sports, politics. Learning poems and other short works in another language; translating a play. Writing "letters to the Editor" about current local problems or interesting events. Proofreading another's work. Reading books and writing reviews in addition to regular school assignments; criticizing movies or plays. Imagining and writing dramatic incidents. Writing letters to friends describing your activities. Planning plays, pageants, etc., for special occasions at school or church. Writing new words to old songs. Reading, omnifarious and specialized. Winning medals for essays. Belonging to poetry, journalism, or other literary club. Writing lyrics for special events. Belonging to Catholic School Press Association, Future Journalists of America, Quill and Scroll Society. Success in English classes. Summer job on hometown paper. Serving as "local correspondent" for the city daily.

ILLUSTRATIVE TEMPERAMENT ROLES: Subjective as the ESSAYIST putting forth his views of life on the current scene as he sees it. Valuative as the CRITIC praising or judging a performance in terms of his own reactions to it. Influencing as the EDITOR, EDITORIAL PAGE seeking to rally his readers for or against a cause. Adaptability to specific instructions for "ghost" writers and others who write according to the specifications laid down by others. Dominant as the EDITOR, MANAGING, NEWSPAPER who has the responsibility of presenting the news to the public every day on time, and seeing to it that each person on his staff performs his duties efficiently. Self-controlled as the REPORTER who is always racing against time to get his story in for fastest possible publication, and preferably ahead of rival newspapers.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas as the COLUMNIST analyzing the news in an effort to bring the public to a better understanding of the issues involved. Abstract, Creative as it is often said the spirit of an age is created by its writers. Scientific as the WRITER, TECHNICAL PUBLICATIONS who must have a knowledge of the science or technology about which he writes. Prestige as the PLAYWRIGHT whose name goes up in lights OR the FOREIGN CORRESPONDENT who is known to heads of state all over the world and whose stories have a world-wide audience.

CREATIVE WRITING. Work, training, and leisure pursuits in which words are used as a mode for artistic expression.

Explore DOT OGA: 130 Freelance Writers

Related Career Possibilities: All Occupations in 13 Writing Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: English, Languages, Literature, and Drama.

RELATED COURSES: Linguistics, Literary Courses, Drama Courses, Fiction, Literary Criticism, Biography, Bible Literature, Creative Writing, Expository Writing, Elizabethan Literature, Folktales, Greek and Roman Literature, Great Books, Essay Writing, Metric Principles of English Poetry, Narrative Writing, Play Writing, Short Story, Shakespeare.

RELATED LEISURE PURSUITS: Consider the same pursuits which are listed broadly for the field of Literary Art. The originality displayed in the pursuits is more important than the particular type of literary activity.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): What is creative writing? It is not so much the kind of product written - essay, history, poem, or play -- but a property conferred on the product by the transforming power of words freshly used to convey images and concepts. One view holds that creative writing is only that which starts with a mood, feeling, compulsion or other inner experience on the part of the writer that comes to him out of some "other consciousness" - perhaps as he idles his engine at a stuck traffic light or walks to his office on a quiet summer morning. The story will write itself; the poem arise in his mind formed according to the strict laws of the sonnet: the writer will not know how or why and he cannot explain his experience. This is the "romantic" manner of genesis as presented by many writers, e.g., Upton Sinclair: "A novel came rolling into my field of mental vision; not just the outline but a whole series of events with the emotions that accompanied them and a string of characters, old and young, good and bad, rich and poor."

Writers with an opposite view, however, do not feel that words such as imagination and inspiration have any place in their lexicon and they ask how you can justify the use of such terms when there is no systematic way to describe the concepts. This type of writer likes to devise theorems for writing. He has ambitions to establish poetry as a medium for presenting a scientific view of the world. He seeks to avoid facile expression and develops techniques for conveying his artistic message through symbolism. Such writers often belong to "movements" which are doctrinaire in advancing a particular art form. They may be quite esoteric in vocabulary and write essentially for "each other."

Writers in self-reports speak of the "self-imposed torture" involved in the meticulous reworking, cutting, throwing out, and rewriting. To become a writer and artist, the writer must first of all have something to say. If he acquires a style which makes it easy for the reader to get meaning from the page, simple yet full of surprising but valid use of words, he is well on his way to achieving mastery of an artistic writing technique. He will need in addition sensitivity to the subtilities that achieve the rhythm of a well-written page of prose. This seems to be acquired only intuitively, well beyond the reach of analytical teaching. Music has laws of counterpoint; painting of perspective. But the cadence of language which is the outcome of alliteration,

the pause and the inverted sentence, easy stress following nonstress has not become communicable by formula.

Can creative writing be taught? It is taught everywhere, in high schools, in colleges and universities, in all kinds of creative writing workshops, at night schools, and by correspondence. Creative writers themselves teach it. Catherine Anne Porter and a host of other writers say it cannot be taught, except as the person teaches himself by living, reading, and writing.

Creative writing has been the most conspicuous of the fields that have resisted prescribed standards of preparation and structuring of any kind. The field is characterized by the fact that so many of its giants were not college trained. From Shakespeare to George Bernard Shaw and including practically all of the Nobel Prize winners among British men of letters, English writers have been predominantly noncollege people. This is true also of the majority of American Nobel winners and of other "greats" in American literature, e.g., Faulkner, Hemingway, Steinbeck, James, Frost, O'Neill. Truman Capote and Betty Smith announce in interviews from time to time that they are not high school graduates, that they have "made themselves." Creative writers frequently have a diversity of jobs in their backgrounds which have involved them in many experiences with many kinds of people, e.g., seaman, newspaper reporter, ranch hand, show business, teaching, laborer, prospector, truck driver, and other kinds of ordinary occupations.

The high incidence of self-education among creative writers may stem from their dogged pursuit of their own values. Robert Frost pointed out that the scholar acquires knowledge on assignment, but that the artist acquires his through love in his own time and in his own way. Through the mysterious germinative powers of the creative imagination, the artist's knowledge is reconstructed and synthesized into new orders of literary art.

ILLUSTRATIVE TEMPERAMENT ROLES: Valuative in the intuitive manner of work, writing what comes to mind, not knowing where the first chapter written will fit into the completed book. Subjective for those creative writers who write from inner mood - exaltation or gloom - often feeling that the material writes itself, as if given by "divine dictation." Rigorous in the hard work of polishing, as the LYRICIST reviewing every image, every metric emphasis, every last comma to screen and select for inclusion in the poem on the basis that it is the only possible way to achieve the total effect which will be its final art.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas - Poetry is said to contain the deepest interpretation man has made of himself. The creative prose writer through the imagistic use of language evokes for the reader of the bare print the golden plush look of mountainside treetops in the evening sun, the good taste of the camper's fried egg breakfast, the chill of gooseflesh as the lone woman enters a dim empty house shuttered under dust sheets. Abstract, Creative in working with the impact of many complicated thoughts at once and keeping in balance all elements of a written work so that their interplay will achieve an artistic total result. Prestige for the successful few - society's accolades and awards, triumphant recognitions, being widely sought after and listened to. "Time worships language," and out of every several generations of literary figures, one emerges to be the symbol of his civilization for thousands of years.

COPY WRITING. Work, training, and leisure pursuits which involve the writing of materials designed to please people or to induce a desired action, attitude, or opinion.

Explore DOT OGA's: 131 Writers and Editors, Motion Pictures, Radio and Television;
132 Writers and Editors, Publications;
164 Advertising Management Occupations;
165 Public Relations Management Occupations

Related Career Possibilities: All Others in 13 Occupations in Writing

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: This field is entered in a variety of ways. Some work up from lesser jobs with only a high school education. Some come into it with majors in liberal arts, history, business administration, dramatics, journalism, English, psychology, languages, economics, etc. In fact, talented writers with almost any background have been successful in this field.

RELATED LEISURE PURSUITS: The leisure pursuits which are associated with other writing fields and with Public Relations work are the same which often interest people in this field. Debating, dramatics, short story writing. Staff of school newspaper or magazine. Script writing. Adapting books. Writing lyrics for special occasions. Medal for essay writing. Poetry or journalism club. Doing advertising work or copy writing for club or school paper. Interviewing people to develop materials for a story. Any activity showing capacity for keen observation of people and their behavior, and ability to write in a clear and interesting manner descriptions and interpretations of observations.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): This type of writing might be termed applied creative writing. It holds the same relationship to creative writing that commercial art holds to fine art. It brings into play the imagination and creativity of the writer. However, he must write on assignment; he must turn his talents to the requirements of the employing organization, rather than write primarily to express himself as may the creative freelancer. One type of writing he may do is to produce advertising copy, the purpose of which is to extol the merits of a product in such a way that people are motivated to buy it. He may write movie, TV, and radio scripts, particularly the more routine types, such as spot advertising script, or copy from material submitted by a sponsor. He may originate and prepare material that is to be read by radio and TV announcers to introduce and connect the various parts of musical, news, and sports programs. He may prepare dialogue for sketches, plays, and other types of programs which are an aspect of ongoing daily TV and radio shows. There are various similar kinds of writing he may do.

Such writers must finish copy at scheduled times and are frequently required to work under tension. The work may be highly competitive. They are required to do the research necessary to ascertain authenticity of facts, and must have the tenacity to dig to get the facts they need. They must know the field of advertising, or forms of radio writing such as continuity, commercials, and plays, or the techniques of script writing for radio, stage, films, or television. This will involve a good knowledge of such techniques as allowing for effects of camera angles, cuts, and dissolves. Such writers require a flair for the ability to popularize. They are the kind of people who keep up to date with what is going on in the world, who are skillful in cultivating people who can be helpful to them. They read new books, see new plays, hear good concerts, know what is happening on television, keep up with papers, magazines, and motion pictures. They are always stopping, looking, and listening to the world around, absorbing it, and then putting this to use as ideas for advertising copy, scripts, commercials. They are always looking for stimulation and ideas which they can apply in their work, for that work is insatiable in its appetite for new ideas. Their existence in the work depends upon their ability to keep flowing a fund of new ideas. One of the stresses of the work is the rapidity with which ideas, as rapidly as they are generated and made known, are appropriated by others.

ILLUSTRATIVE TEMPERAMENT ROLES: Versatile as the writer of a woman's half-hour daily program on television; featuring a different topic every day: fashions, music, social welfare, better business, Cajun folklore, and endless other topics which writer feels might interest viewers, requiring constant and changing research and observation. Valuative as in adapting an adult book for use at an Institute on Children's Theater, intuitively reshaping language from its adult slant to levels which are suitable for children. Gregarious in being sensitive to other people, to see things from their point of view, and anticipate their responses to ideas and styles of writing. Influencing in zest for motivating people. Subjective in that these writers depend heavily upon their inner feelings and sensations. They observe and write of reality with a heightened excitement; they strive to use words in rare and suggestive combinations. To do this they must surrender to the wild and free ranging processes of the mind, rather than work from rules and logic.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas in ability to relate to reader's world of aspirations, problems, and self-interest in what they write. Abstract, Creative in dealing with the evocative and illusory, in creating mood effects such as mysticism, fantasy, imaginary people and imaginary conversations. Prestige as these writers may associate with prominent and interesting people. They may achieve "name status" in their own right.

JOURNALISTIC WRITING. Work, training, and leisure pursuits which involve reporting, editing, and interpreting facts, events, and opinions of public interest. Journalistic writing includes editorials, news reporting, commentary, or other material to be used in the various media of public communications, such as newspapers, magazines, radio, television, and motion pictures.

Explore DOT OGA: 132 Writers and Editors, Publications

Related Career Possibilities: 130 Freelance Writers; 131 Writers and Editors, Motion Pictures, Radio and Television; 132 Writers and Editors, Publications; 139 Occupations in Writing, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Journalism is entered in a variety of ways. The most necessary qualification for it is a comprehensive education. One way is to begin on a small newspaper in almost any capacity and work up. Some do this with only a high school education. The liberal arts major in college is traditionally a major recruiting ground for journalists. Professional journalism schools abound, as college and university departments. Journalism is also taught as night courses, and at special schools. The average undergraduate journalism program consists of an introductory course in the mass media; newswriting and copy-editing courses; a course in the history of journalism; and perhaps one in journalism, government, and the law. The student then chooses a specialization from courses in news-editorial, magazine work, public relations, advertising -- and in the larger schools -- radio-television-film (in a variety of segmentations), newspaper management, the community newspaper, industrial publications, photojournalism, or graphics. Graduate training in this field, and undergraduate to some extent, increasingly features communications arts and sciences in the curriculum and stresses the application of behavioral science research and theory of communication processes.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The number one qualification for journalism is perhaps a probing curiosity and dogged honesty which drives the person to get at the real facts back of any situation. The dissemination of information to the public in journalistic form seems to have begun with Julius Caesar's AETA DIURNA. Although the press has been controlled and set up as an organ of state in many countries, in the United States freedom of the press has been so greatly prized in its culture that this freedom was guaranteed in the first Amendment to the Constitution passed in 1791. The Fourth Estate, i.e., the free press, is the main institution available to the ordinary citizen to inform him of the kind of world he lives in. As an institution, journalism has a long tradition of ferreting out unpopular truth and bringing to light various kinds of abuses in society or developments which other established disciplines ignore or reject because they run counter to what is accepted as "true" or "proved." A considerable tension exists between journalistic and other professional communities which are based on an esoteric body of knowledge. The journalist writes of such technical fields in terminology understandable to the lay public. His writing may be derided by terms such as "sensational journalism," "yellow journalism" or dismissed contemptuously as being "popular." The journalist may see himself as the "watch dog" of the public interest who saves it from being "bamboozled" by claims of experts or perhaps "the establishment," which may be legal, scientific, political, or other.

This unique function of journalism in society has great bearing upon the kind of people who are attracted to it. The idealist person attracted to journalism precisely because of its traditional role, may find it stressful if he gets a job in which he must "slant" what he writes to conform to the policy of the organization that he works for. But it is frequently the case that he must so "slant" what he writes, and this may be a source of dissatisfaction that he does not have the "ideal" freedom he expected.

A tension for the perfectionist writer going into journalism is that he must turn out copy very rapidly. There is limited time for fuss with style and "fine language." He must compromise the quality of his writing in terms of the immediate requirements of the hour.

Journalism requires people with a mind like an attic in its storage of odds and ends of information, who read everything from Chaucer to the comics, so that they are able to constantly make patterns and connections out of the endless stimuli of events which they observe and report. The journalist can't be the kind of person who backs away from strangers. He must be able to get people of all kinds -- from panhandlers to premiers -- to talk to him about every topic under the sun. He always holds his news sources in confidence.

RELATED LEISURE PURSUITS: All the leisure pursuits which are listed for Literary Work, with particular emphasis on those which involve working on journalistic publications.

ILLUSTRATIVE TEMPERAMENT ROLES: Versatile as the REPORTER starting out in the morning with little idea of what lies ahead: perhaps a murder trial today, tomorrow a theatrical press party, or an airplane crash, or a beauty contest, or a marine disaster. Dominant to maintain control of situations in which must take the initiative or be unbluffable in the face of resistance and pressure, to have what it takes to "aim for the jugular" in "fighting city hall," e.g., exposing facts which the public should know. Self-Control in overcoming seemingly unsurmountable obstacles or in fearless reporting of controversial facts -- enduring hardships and dangers to get the news, on the battle front, out of the ghetto, or by sleuthing the underworld. Valuative in the interpretation of the times, to distinguish between surface events and those of news significance; in ability to determine what makes a story that will interest readers; in sensing right questions to ask to get the news. Objective in intellectual integrity, compelling passion to learn the truth, taking nothing for granted, looking for real causes and effects, in searching and self-critical attitude, and in rational interpretation of news events. Rigorous in verifying facts.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas - the aim of journalistic media is to inform the public of change in a fast-changing world and to show it how events that happen emerge from a long historic sequence. Abstract, Creative in the imagination required to dig for news and in editorial commentary that gives meaning to the happenings in the world and relates them to the overall continuity of human experience. Prestige in knowing people to whom things happen and those who make things happen - at times being on the inside when things do happen.

TRANSLATING AND INTERPRETING. Work, training, and leisure pursuits which involve the translation of prose, poetry, or other written material or interpreting conversations, speeches, or other spoken discourse.

Explore DOT OGA: 137 Interpreters and Translators

Related Career Possibilities: Other Occupations in 13 Writing;
159 Occupations in Entertainment and Recreation, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Translators must have a thorough knowledge of the two languages with which they work. For some types of translating, a body of technical knowledge is required. Other types require that the translator be a literary artist in his own right.

The interpreter is usually required to have perfect command of at least two languages in addition to his native tongue. Some jobs require a college degree with a language major.

Language families: Languages, Romance Languages (French, Spanish, Italian, etc.); Germanic Languages (German, English, Swedish, Afrikaans, etc.); Celtic (Irish, Welch, etc.); Far Eastern and Oceanic (Chinese, Japanese, Polynesian, etc.); India and Persia (Hindustani, Bengali, Persian, etc.); Slavic and Baltic (Russian, Finnish, Polish, etc.); Arabic-Syriac (Egyptian, Moroccan, etc.); Turkic (Turki, Mongol, etc.).

RELATED LEISURE PURSUITS: Specific pursuits which have involved the use of the language being translated or interpreted and provided insight into the people who speak it, their customs, literature, and speech idioms.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Translating is of two kinds. One type is performed extensively for industry and government. It consists of conveying the exact meaning of a word from one language to another. The craft of this type of translator is based on his knowledge of technical language and his ability to give an exact and clear rendering of the words from one language to another. This is the type of translating which it is visualized computers will eventually take over.

The second type of translator translates from one language to another, retaining and reconstructing the literary idiom of the translated material. This type of translator must be a competent and creative user of both languages he is working with. Such translating is a self-effacing art, yet requiring a literary power on the order of the original literary writer. This translator must take a piece of literature, separate the meaning from the form, and attempt a reconstruction which preserves both meaning and form. He must not violate the spirit of the original author or try to superimpose his own thoughts and style on the original. His task is to attain a reasonable balance between the word-for-word job and too loose paraphrasing, which makes available to foreign readers an emotional and intellectual effect as close as possible to that which characterized the original work.

The interpreter listens to discourse in one language and repeats the thoughts as accurately as possible in another language. Usually the language into which he interprets is his native tongue. He may record the material in shorthand and transcribe it, in which case he is functioning essentially as a translator. The interpreter may work under great pressure in situations where he cannot ask a speaker to go slower or have the time to consult a dictionary. Interpreting requires an extreme fluency in both languages and a very agile mind to rapidly paraphrase from one to the other, as well as a very good attention span to keep the train of discourse firmly in mind and not lose track of the real meaning of what is being said. Interpreting is frequently done on a part-time basis by those with fluency in the languages who are regularly employed in other occupations. It is performed in connection with international conferences, business transactions, legal proceedings, travel bureaus, broadcasting, publishing, airlines, importers and exporters, and wherever individuals or groups who speak different languages are communicating with each other through speech.

ILLUSTRATIVE TEMPERAMENT ROLES: Self-control for the INTERPRETER to resist confusion during rapid crossfire of a heated dialogue when the worked up feelings of two antagonists can only be conveyed to each other through the interpreter. Objective for the INTERPRETER in being completely honest and dedicated to truthful interpretation and for the TRANSLATOR striving to capture the style of the original and avoiding any overlay of his own style. Valuative for the literary translator trying to understand and convey subtleties of meaning. Rigorous in the translation of technical material so that all terms are faithfully rendered.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas in the ingenuity required "to drag the language over the wall" in such activities as rendering illiterate lingo from one language to another to preserve the original humor OR in uncovering and trying to reconstruct eccentricities of style, e.g., the INTERPRETER rendering cultivated Parisian speech in a manner understandable to the rural inhabitants of Quebec, OR the TRANSLATOR making understandable in English correspondence written in a Mandarin dialect. Abstract, Creative for the literary translator who endeavors to render the magic which hides in the imagery of an original work. He may be faced with the task of creating images in the other tongue which convey an effect similar to the original but which cannot be pulled out by a literal translation of the original.

TECHNICAL WRITING. Work, training, and leisure pursuits involving the reporting, editing, and writing of technical materials.

Explore DOT OGA: 13 Occupations in Writing (Technical Writers)

Related Career Possibilities: 00, 01, 02 (Engineering and Scientific Occupations)

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: People in these jobs may have been clerical people with a talent for writing who developed their facility for technical writing by experience in the field about which they write. They may be liberal arts graduates or have a degree in engineering or science. They must possess good writing ability combined with knowledge of the technical field about which they write.

RELATED LEISURE PURSUITS: Any combination of pursuits which might be listed under Literary, Scientific, and Engineering fields of work.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The technical writer converts information into a form so that it can be absorbed by people who need the knowledge. It may be to explain equipment, write directions for its use, or to explain how to set it up. The written materials may be in the form of manuals, specifications, histories of research projects or reports of research, articles on technical subjects, and the like, and it may appear in magazines, books, pamphlets, bulletins, instructional manuals. It may be directed to uninformed lay readers, elementary or advanced students, or to professionals in subject-matter fields. Technical writers may acquire their information through study of background materials, observation of tests and equipment, or through interviews with subject-matter specialists, such as engineers, scientists, mechanics, repairmen, or other experts. They may acquire data needed in writing by interpreting blueprints, diagrams, charts, engineering reports and specifications, or through personal operation, maintenance, or repair of equipment, devices, or systems. Regardless of what they write, they require a broad general grasp of scientific principles as well as a specialized knowledge of a particular field of science or engineering. They must be able to think logically. In their vocabulary, they must stick to neutral, nonaffective words. There is no place for self-expression in what they write. They must have the facility of being very precise and making what they say crystal clear to the reader. This severe restriction on style, or imposed sparseness on what is said, may make the work seem dull to the imaginative writer.

ILLUSTRATIVE TEMPERAMENT ROLES: Objective in factual approach and in strict adherence to proven data. Rigorous in precise expression which must be of a mathematical order of clarity.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Scientific to attain a good understanding of scientific field in which writes. Working with Machines, Processes, and Techniques for technical writers who write explanations of and directions for operation or setup of machinery and equipment.

PERFORMING ARTS (GENERAL FIELD DESCRIPTION)

The mode of the performing arts is the personal use of the self - the body and/or the psyche - to create roles before an audience which enable it to relive in consciousness emotions and feelings as they have been part of the inner life of other people, OR the transcendent performance of an athletic game or sport, OR exhibitions of showmanship or daring which achieve art status due to the charismatic power of the performer.

Performing artists whose mode is the conveying of experience are generally spoken of as interpretative artists in that they interpret a role which has been formulated by a literary artist. The dramatic performance is not possible without the dialogue as created by the writer. The literary work is dependent upon the performer to flesh it into life in a manner beyond the capacity of bare print alone.

Traditionally, the performing arts have been an affair between a performer and his audience, and the performer's personal interaction with his audience was in a sense an aspect of his performance. The role of the audience itself was functional and creative. This still holds in legitimate theater and in other kinds of across-the-footlights performing. However, a great body of the performing arts today is filmed for TV and movie showing. Even live broadcasts by TV and radio separate the performer in space, if not in time, from his audience.

The performing arts, although numerically small in number of workers employed, are symbolically of crucial importance in their great influence upon the mores and goals of society. As viewed in occupational sociology, they represent a marginal profession in that the roles are not clearly defined and there are no established educational standards. They provide the opportunity for upward mobility for persons in the lowest socio-economic circumstances. A spectacular rise to fame and success on the basis of individual gifts and efforts is common; chance often plays a decisive role in success.

In terms of their own self-image, performing artists, as is true of all other artists, see themselves as born with special gifts and talents which make them a natural elite.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: All courses concerned with the histrionic development of the individual, physical education, general cultural subjects, human sciences as they contribute to the understanding of man.

RELATED LEISURE PURSUITS: Active sports and recreations. Theatrical and other performing pursuits. Scholarships, prizes, and other recognition of performing ability, such as comments by teachers, critics, or professional performers. Membership in dramatic, public speaking, athletic, or other club concerned with personal appearances before an audience.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The wellsprings of the performing arts, as other creative endeavors, are a matter of dispute among practitioners. There is the methods approach which would objectively observe the performer to identify each thing he does, the techniques he uses in doing it, and the effect, in order to select those which are effective and define and classify them. The opposite point of view sees the core of the performing talent as secret, personal, and without prescription. Both points of view contribute to understanding the nature of dramatic art. Regardless of talent, no dramatic tour de force is achieved without that "terrible discipline without which no art is possible." The rewards of the work may be fabulous. To some persons success may be immediate or even come as a bolt out of the blue. For others success is attained only after long years of self-sacrifice, loneliness, tedium, and tiring shoestring economics.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious in the sense that the performer requires the ability to identify with or relate to the personalities of others. Self-controlled in the ability to achieve at will the total absorption in role or act necessary to perform it. Influencing in that the performer requires in addition to his skill that indefinable something which may be termed "audience-pleasing" ability. Subjective in comprehension of and respect for his particular uniqueness of physical attributes and personality. The performer is always greatly concerned with his individual development. His aim is to become a performer in a class by himself. This contrasts with some professional classes of work in which status is achieved by acquiring qualifications which are standardized for members of the profession. Rigorous in submitting to disciplines of his art and craft -- the performer is not likely to succeed if he permits other values and interests in his life to weaken his aspirations towards optimum development of his talents.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas in conveying every theme of human significance. Abstract, Creative as the BASEBALL PLAYER dreaming up new schemes to befuddle and outwit the opposition OR the ACTOR translating the life of any man or all men intensely into a portrayal through the personal use of himself. Prestige in that successful performers are well rewarded in terms of audience response and renown. They serve as role models for large segments of the population. This recognition is the life blood of their existence as artists.

PUBLIC SPEAKING (Lecturing, TV and Radio Announcing). Work, training, and leisure pursuits in the art of expressing facts, ideas, impressions, and information in speech before an audience, camera, or microphone.

Explore DOT OGA's: 090 Occupations in College and University Education (Lecturers)
159 Occupations in Entertainment and Recreation, n.e.c.;
294 Auctioneers; 353 Guides (except hunting and fishing)

Related Career Possibilities: 15 Occupations in Entertainment and Recreation;
96 Amusement, Recreation, and Motion Picture Occupations, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: The best preparation for work in this field is a general education which has given the person a broad cultural background, with special courses in public speaking, languages, music, drama, art, and advertising. Training in radio announcing, at a vocational school or college, is pertinent. Liberal arts majors may find this field of work to offer possibilities.

Courses: Effective Speaking, Elocution, Extempore Speaking, Forms of Public Address, Fundamentals of Speech, Group Discussion and Conference Leadership, Microphone and Recording Techniques, Persuasive Speaking, Public Discussion and Debate, Radio and TV Announcing, Radio and TV Broadcasting, Speech Composition, Speech for the Radio, Speeches for Special Occasions.

RELATED LEISURE PURSUITS: The array of leisure pursuits which invite the interests of people in this field are practically across the board because of the great variety of situations in which public speaking as a skill is utilized. Pursuits related to social life and events serve as a clue that the person has the curiosity and sensitivity to the world he lives in that work in this field requires. Interests in general social issues, such as racial problems, population explosion, disarmament or other general interests such as animal population, conservation of natural resources, space technology, medical research. Quite specific to the art of public speaking itself: Studying rhetoric and public speaking. Attending lectures. Being Master of Ceremonies at a banquet. Giving impromptu talks at religious, political, or other meetings. Taking charge of discussion groups. Belonging to a debating society and engaging in oratorical contests; studying famous orators and their orations. Entertaining friends by describing trip, illustrating with slides, or accompanying home movies with narrations. Summer job as disc jockey. Speaking over a public address system. Public readings. Participating in radio or TV broadcasts, as round-table discussions, etc., held for students, church workers, club members, or other community group. Belonging to language club, Forensic League. Bull sessions, discussions, arguments, leading or moderating discussion. Telling jokes, humorous stories. Dramatics activities.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): For those who wish to use their voice and art in its use as a craft for earning their living, there is a wide range of activities to consider. The voice is a principal tool, of course, in many occupations: teaching, selling, acting, law, the ministry, and public contact of many kinds. The field treated here relates to the opportunities in which the voice and its use is the basic skill involved in the job.

In this field workers are required to have a pleasing, natural voice, not distorted by artificial theatrical speech training. They should have attained a standardized speech which gives no indication whether it is being spoken in New Orleans or New York. Enunciation must be so clear that an audience can understand every word. The voice should be alive and distinctive. Most, but not all, jobs in this field will require the worker to use a microphone or a public address system. Some workers talk continuously for long periods of time, while others talk intermittently. In this field workers may: (1) announce or broadcast all kinds of news events; (2) conduct radio and TV shows furnishing various kinds of commentary; (3) escort groups through museums, art gallaries, historical buildings, etc., lecturing on points of interest; (4) prepare commentary for motion picture sound tracks; (5) read to blind or infirm persons; (6) make broadcasting announcements for advertising and publicity purposes from a public address system on a light truck or a blimp; or (7) prepare and deliver talks on subjects about which the worker has made thorough study and research, or has specialized knowledge of for some other reason, e.g., mountain climbing, sea bottom exploration, war front experience. High standards of personal appearance are required in this field.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious to the extent of being able to meet and deal with the public. Versatile as the RADIO ANNOUNCER who does an all-around job, such as introducing programs, reading news after making a sales pitch for a sponsor, perhaps performing by telling a lively story, manipulating controls and switches of broadcast equipment, and answering the phone when recorded programs are on the air. Influencing for radio and TV announcers who must speak with conviction and enthusiasm on products which are being advertised on the air. Self-controlled to be able to react quickly and imaginatively to unusual situations both for people who are broadcasting and for those lecturing to an audience. Valuative as the RADIO ANNOUNCER judging the appeal and adequacy of coverage while describing events or in thinking up impromptu chatter to maintain audience interest during a lull in activity at an event which is being televised. Objective in seeing both sides of a question as on radio programs where public expression of opinion is invited. Rigorous in being absolutely punctual and dependable. TV and radio programs are scheduled to the second and the lecturer too is expected to appear at his podium on time. Subjective for those personalities in TV and radio whose reporting speaks directly to the world we live in, in terms of their personal interpretation.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in playing the role of "good will ambassador" when presenting commercials. People and Communication of Ideas in activities such as conducting "ad lib" interviews with celebrities; giving running descriptions of special events such as rallies, parades, and conventions; giving human interest facts about dignitaries; explaining events which cannot be seen to a radio or TV audience; presenting biographical information about news personalities; providing comments about music on a broadcast; giving play-by-play descriptions of sports events; or in using graphs, slides, pictures, and other visual aids to highlight subject matter of a lecture. Abstract, Creative in preparing original lecture material which may project a fresh viewpoint or make known new facts. Prestige in that these workers may meet many important and famous personalities and they themselves have the possibility of establishing "name" status.

DRAMATIC PERFORMING. Work, training, and leisure pursuits in the art of portraying action and states of feeling, through speech, facial expression, and body movements.

Explore DOT OGA: 150 Occupations in Dramatics

Related Career Possibilities: 151 Occupations in Dancing; 152 Occupations in Music; 153 Occupations in Athletics and Sports; 159 Occupations in Entertainment and Recreation, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: The avenues of entry into dramatic art are diverse. Many leading performers in the field have "made themselves" through their personal cultivation of their gifts and talents and their self-acquired broad cultural background which is the underpinning of dramatic achievement. However, facilities for formal preparation in the field are extensive. The would-be dramatic performer is well-advised to equip himself with thorough professional training. This is available in (1) professional dramatic schools, (2) the university dramatic department (in which a B.A. or M.A. degree may be obrained - particularly useful in teaching dramatics), (3) receiving instruction from professional coaches in an informal, studio-type atmosphere, and (4) playing small roles and bits or doing backstage work in summer stock and resident repertory companies. Participation in amateur theatricals can be an avenue for developing acting skills.

RELATED COURSES: Acting, Anatomy and Physiology of the Vocal Mechanism, Art of Storytelling, American Drama, Classical Drama, Dramatic Arts, Dramatic Reading, History of the Theater, Interpretation of Literary Types, Oral Interpretation of Literature, Oral Reading, Pantomine for the Actor, Play Production, Professional Reading, Shakespeare, Stagecraft, Study of Roles and Scenes, Teaching of Speech and Drama, Television Dramatic Production, Theatrical Dialects, Theatrical Make-Up, TV and Radio Acting, Voice and Diction.

RELATED LEISURE PURSUITS: Scholarships, prizes, or other recognition of dramatic ability, such as comments by teachers, critics, or professional performers in the field. Membership in dramatic, public speaking, or other club concerned with personal appearances before an audience. Parts in plays or entertainments, or direction of such events, staged by schools, churches, clubs, Little Theaters, amateur theatrical groups, stock companies, TV, motion picture, or radio broadcasting companies. Impersonations. Organizing a children's theater group. Taking part in a religious or historical pageant. Telling stories to hospitalized or invalid children. Giving public readings of poems, one-act plays, short stories. Planning and acting in home movies. Participation in dramatic workshop, radio work, dramatics in military. Producing "cellar productions" for the neighborhood trade. Liking to read memoirs of great actors and actresses -- Bernhardt, Booth. Following "opening nights" on broadway or movie premiers. Becoming a walking concordance of Shakespeare, developing a mind ringing with English verse. Studying great plays; the Greek dramatists; the great moderns - Ibsen, Shaw, Chekov, O'Neal; the theater and acting as it took place in ancient and Elizabethan theater and contemporary theater movements such as the theater of the absurd, antiplays, etc., "happenings," etc. Listening carefully to TV dramatic productions, seeing movies and new plays, reading reviews, all with the intent of acquiring sensitivity to techniques of dramatic performance.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): In a conference on the relationship between educational and professional theater held at the University of Minnesota, Joseph Anthony gave the following description of what the actor is: "He must have a good voice of good range; good speech; a good ear for inflection and accent and the affect of character; breath control; a body able to obey command without stress or tension; grace and ease of movement; a balanced arrangement of the conscious analysis of what it is to be acted in the role undertaken and yet richly supported or dictated by the unconscious or intuitive and instinctive; sensory responsiveness; a curiosity and increasing awareness of human motivation both intuitive and observed; the ability to concentrate or fix attention at will upon a given assignment; the ready and innocent trust of self which is the basis for release from self-consciousness; the childlike desire to believe in that which rationally is not to be believed; insight into the differences and similarities between all human beings, a fervent humanity and hunger for the inquiry into themes of human significance, the power to translate the lives of any man and all men intensely into human behavior through the personal use of himself; the appreciation of beauty in all its forms recognized or as yet unrecognized; and enjoyment of behaving in the various styles and periods of theater conventions, and an equal enjoyment of bringing into fresh contemporary meaning the mores and social usages of other times and countries than our own and the present time; the capacity for work, and joy in work; the comprehension and respect for his particular uniqueness of physical attributes and personality, and the willingness to exploit them to the service of a play; an aware and mature acceptance of his role in this period of our theater history and his readiness to assume his share of responsibility for the character and condition of our theater through his life time. And this is not all.

"As soon as you get near to the heart of his total training you get near to the core of his talents and the nurturing of what is secret and personal and without prescription and can only be dealt with individually and in each case with a new and unpracticed method.

"This description is in the order of an attempt to see the goal when we approach the young actor as his teacher. It must be added to by each of us who cares about him during each day of our work. The effort to describe the actor is a magnificent and satisfying and inspiring effort even when it defies our ability to pin him to the page."

DRAMATIC PERFORMING --
PERTINENT INFORMATION (Continued)

Against this description must be balanced a statement which is frequently made that brass, ingenuity, and persistence are the ingredients that enable one person with talent to make a go of acting, while another with talent fails. The advice usually given is that unless the person has a consuming interest in acting as such -- stripped of all glamour and possible reward -- it it useless for him to aim towards an acting career. The legend of overnight success and stardom for the soda jerk not only survives - it still happens. But of all who aspire to act, only a few with the most deadly determination and capacity for struggle survive. Usually it requires a nightmare period of dreary living and endless rounds through the bewildering mazes of "show biz." No one can really say how it is possible to "break into acting." Moreover, after "arriving," the occupation has little stability, the public is fickle, the critics unpredictable. To many the "break" never comes and they live on the fringes of the art, in minor and bit parts, as movie extras, even as stage hands and wardrobe women. Others may be more fortunate and get established in theater-related careers, which in their own way may be quite as satisfying as acting: stage managing, camera work, makeup work, costuming.

There are two main types of actors. In one type, the personality of the actor subdues the role, requiring personal magnetism and publicity. In the other, the personality of the actor is submerged in the role he plays. Strictly speaking, the latter is regarded as the true dramatic artist.

There is great contrast between stage and screen acting. The stage actor not only obtains satisfaction from each performance in the sense of having achieved a unified artistic completion of the role, he is also inspired by the response of his audience. Acting for the screen is done in bits, rather than consecutively. Moreover, acting before mechanical equipment lacks the inspiration of an audience.

All types of dramatic performers live in a world which is steeped in imagination and pretending. They must be at home in the world of make believe; frequently their affinity for pretend and mimicry was a characteristic of their childhood.

Dramatic performers are required not only for legitimate theater and in movie productions, but in television specials, soap operas, commercials, industrial shows and movies, for night clubs, tent shows, arena theaters, and permanent repertory companies. Although creative dramatics represents the apex of the field, it incorporates within its boundaries a very wide range of popular art and mass communication.

DRAMATIC PERFORMING (Continued)

ILLUSTRATIVE TEMPERAMENT ROLES: Versatile in repertory of moods which may be required for even one stage performance - gaity, melancholy, heroics, surliness. Adaptable to working under specific instructions, especially for screen actors, as expressed by one: "On the stage you're boss; in a film you're a puppet." Gregarious in the sense that acting requires a certain outgoing quality, or exhibitionism, which makes it possible for the actor to make a display of himself before others. Being the center of other people's attention is pleasing to him. Influencing as the COMEDIAN who succeeds in his role as a "funny man" to the extent that he persuades his audience by his manner of delivery that his lines really are funny. Valuative in awareness, both intuitive and observed, of human motivation. When the actor says "there's something in the character that escapes me," his insight is limited and consequently he cannot create the role. Subjective in that the same line spoken by two players can take on an entirely different meaning according to the personality of the performer, e.g., one actor can handle profanity with charm while another makes it offensive. Rigorous capacity for systematic rehearsal, in methodical perfection by practice of each single facet of performance.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas as when audience sees a superlative performance of Lady Macbeth's agony on the stage, the responsive watcher does not simply conclude that Lady Macbeth is headed for a nervous breakdown but is really led to feel, like her physician, "God, God, forgive us all --." Abstract, Creative in the sensitivity to humanity which, as said by Marilyn Monroe, made her able to create a part of suffering, gaity, or loneliness, OR in the capacity of a great actress to assume roles in which she is unrecognizable from one part to the next, e.g., the jeune fille of the summer romance and the alcoholic widow on skidrow. Prestige for those who achieve success and for a few, immortality in the annals of theatrical history.

MODELS AND STAND-INS. Work, training, and leisure pursuits which involve posing, i.e., maintaining a fixed or sustained posture for purposes such as: show clothes (fashion model), show clothes and speak lines (model-actress), strike an attitude or pose suitable to interpret some theme or mood (artist's model), or imitate gestures and mannerisms of star performer (motion picture double).

Explore D.O.T. OGA's: 297 Demonstrators and Models; 961 Models and Related

Related Career Possibilities: 151 Occupations in Dancing; 150 Occupations in Dramatics; 159 Occupations in Entertainment and Recreation, n.e.c.; 153 Occupations in Athletics and Sports; 299 Merchandising Occupations, except Salesmen, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Charm, Dramatics, Fashion Modeling, Figure Control, Make-Up, Modeling, Personality Development, Posture, Public Speaking, Runway and Showroom Modeling, Self-Improvement, Speech and Diction, Stage Presence, Visual Poise, Walking and Posture.

The aspiring model can acquire training in the techniques and art of modeling at charm and finishing schools, many of which also function as model agencies. Persons without formal training in modeling, who display unusual modeling talent, may be hired and training furnished by the employing organization. Stand-ins, doubles, and artist's models are recruited from both the ranks of those who are professionally trained in dramatics or modeling and untrained persons who exhibit the personal characteristics required for the work (such as beautiful or interesting face, resemblance to some historical personage, etc.).

RELATED LEISURE PURSUITS: Participating in beauty contests (particularly winners). Roles in high school or club plays; amateur theatricals. Being a drum majorette. Amateur modeling. Demonstrating in show windows or on local TV commercials. Posing for artist, photographer, etc. Temporary work at conventions and shows of various kinds, when hired on basis of ability to project a fashionable or chic image. Practicing walking in front of mirror. Watching TV beauty contests and studying manner and posture of participants, or the way TV performers develop their acts.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Modeling is generally thought of as a woman's occupation, but there are men who model clothes, and serve as artist's models. The occupations of stand-ins and doubles are open equally to men and women. Workers in these occupations are generally thought of as being in the spotlight, but actually, except for name status models and cover girls, these people generally work in anonymity and rarely enjoy the glamour of "show business" except through association with it in a marginal sense. Nevertheless, such workers are frequently sustained by the knowledge that by some quirk of chance or practical skill in overcoming obstacles, they may leap from obscurity into storybook success -- as a top model or dramatic star. The main requirement for modeling is that indefinable quality called "personality" in its public appearance sense, ability to maintain an unswerving smile and to posture appealingly. Sustained poise, animation, acting ability and freedom of motion are necessary qualities. The fashion model needs professional experience on the runway and in showrooms. Standing-in and doubling, of course, are jobs which depend upon highly specialized qualifications, such as sharing the build, coloring, and perhaps mannerisms of a starring personality.

ILLUSTRATIVE TEMPERAMENT ROLES: To deal with people in an engaging manner is a first necessity in these activities. Adaptability to Routine is involved in that the work is frequently unvaried in the sense that an artist's model may be required to maintain one pose for hours at a time; the fashion model is often required to wear a fixed smile for long periods. Submissiveness in demonstrating clothes in showroom where may be required to be very obliging to all kinds of commands from customers who see the model almost as a manikin rather than as a human being. The model is Subjective in modeling clothes when own distinctive mannerisms and personality style can be considered the basic work skill.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas when modeling for painting, sculptures, and magazine covers in striking suitable pose to express an idea or motif of the art form. Prestige for those jobs which put the worker in the public eye and occasionally lead to roles in motion pictures and TV, or to name status as a model or cover girl.

DANCING. Work, training, and leisure pursuits involving the art of portraying meaning and emotion through rhythmic, patterned successions of movements, commonly to music. Dancing may be solo, with a partner, or in a group. It expresses itself in such forms as the ballet, which is a stage dance telling a story in movement and pantomine; ballroom, e.g., the waltz; folk, e.g., country-dance; gypsy, e.g., flamenco; modern dance, e.g., Martha Graham style; Latin, e.g., rumba; ethnic; acrobatic; modern jazz; tap; primitive dance; oriental; and chorus which combines dancing and singing. Some types of dancers are regarded only as entertainers, but those in the serious dance forms are looked upon as performing artists. Includes choreography, the art of dance creating.

Explore DOT OGA: 151 Occupations in Dancing

Related Career Possibilities: 150 Occupations in Dramatics; 152 Occupations in Music; 09 Occupations in Education (Physical)

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS AND SPECIALIZATIONS: Many colleges and universities confer bachelor's degrees on students who have majored in physical education and concentrated on the dance, majored in a dance program designed to prepare the student to teach dance, or majored in a dance program designed to prepare students as professional dance artists. Dancing instruction is given at a variety of professional schools: academies, dance theaters, dance studios, dance workshops. In some types of dancing, the skill may be acquired informally or through private tutoring. To become a dancer of any type, the study and practice must begin at an early age. Kindergarten "ballet" is offered to children age 3 to 5. However, training in professional ballet is not recommended before age eight, although it is generally felt that it should be begun at age ten. Toe work should not be attempted before age ten and then only after a few years of previous work in less strenuous dance forms. The serious dancer needs a good background in music, history, and literature to aid him in interpretation of dramatic episodes and of music.

There are no schools in which choreography can be taught. Schools can outline a course of study, but the would-be choreographer has to develop his own special talents. All the distinguished choreographers have been fine dancers before becoming choreographers.

RELATED COURSE AREAS: American Country Dance, Analysis and Techniques of Dance, Ballroom Dance, Character Dance, Choreography, Classical Ballet, Contemporary Dance, Cultural History of Dance, Cultural Survey of Dance, Dance Accompaniment, Dance Composition, Dance Production, Folk Dance, History and Philosophy of the Dance, Jazz, Kinesiology, Labanotation, Methods of Teaching Modern Dance, Modern Dance Techniques and Composition, Movement and Its Rhythmic Structure, Percussion, Rhythms and Dance, Square Dance, Survey of Dance History and Dance Forms, Tap and Clog Dances, Techniques for Teaching Recreational Dance, Theory and Philosophy of Dance. All specific dance courses.

RELATED LEISURE PURSUITS: Doing an exhibition dance or entering dance contests. Inventing new dance steps. Studying the lives and techniques of famous dancers. Watching dancers on television and trying to do the steps. Helping with the choreography for an amateur show. Being a "regular" on a "teen" television dance program. Doing character dancing. Learning or reading about ancient dances, and the dances of other cultures.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Dancing as an art requires the wholly committed artist. Even with great dancing talent and dedication, only a very few achieve the goal all strive for -- being a solo dancer. Other desired goals in the field of dance are becoming a great choreographer, artistic director, or ballet master. The majority of professional dancers will become members of dance companies, teachers or performers in musical shows, TV shows, or at industrial or other exhibitions. Dancers spend long periods of their lives on tour and the rigors of touring are one of the stresses they face.

The choreographer creates the dances. He is an artist who works with motion. He searches for the basic movements which express the emotion behind the human experience of his story. He then translates these movements into the meaningful language of the dance.

As an art, the dance is symbolized by its prima performers -- the Pavlovas, Nijinskys, and Isadora Duncans -- names of artists long dead whose spells on their audiences were so great that they have a legendary existence and influence upon the art of dancing today. They were able to project across the footlights a reality which was immediate, universal, and timeless.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious in the sense of the capacity of the artists who make up a ballet company to work together and unify their efforts to a common goal. Adaptable to specific instructions in the sense of performing a dance routine exactly as planned by the choreographer - yet this conformity to rules must be coupled with an inner fire which conveys feeling to the audience. Subjective in the supreme identification of the performer's self with work, so that through bodily movement and gesture, can convey infinite and subtle shades of dramatic and psychological meaning, e.g., the ballerina through the medium of choreographic language, as the SWAN, flutters across the stage, curves her neck down, trembles, sinks to the floor and dies -- as the audience watches weeping. Rigorous as the dance artist is a tireless perfectionist. Minor faults cause him agonies, even if others do not see them.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas as the CHOREOGRAPHER whose intention is to reveal in the dance he creates some of the truths of human existence. Abstract, Creative as the dancer creating beauty out of empty space as she moves OR the ARTISTIC DIRECTOR achieving a triumphant stage miracle by a unity of costumes, sets, and music. Prestige for the great dancers who are reverenced by millions around the planet and who may be immortalized in the annals of art for generations after their death.

SPORTS AND ATHLETIC WORK. Work, training, and leisure pursuits which involve the art of engaging in some particular play, game, or contest, especially one involving individual skill and physical prowess. Sports are usually divided into (1) diversions of the field, such as fishing, hunting, racing, games, especially athletic games, and (2) various similar games usually played under cover, such as bowling and basketball.

Explore DOT OGA: 153 Occupations in Athletics and Sports

Related Career Possibilities: 159 Occupations in Entertainment and Recreation, n.e.c.;
097 Occupations in Vocational Education, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Adapted Physical Education and Physical Examinations, Administration of Community Recreation Programs, Age Characteristics in Motor Skills, Athletic Conditioning and Training, Camp Leadership, Community Organization for Recreation, Effects of Physical Activity on the Body, First Aid and Care of Athletic Injuries, Graded Games and Lead-Up Games, History and Principles of Physical Education, Human Anatomy, Introduction to Recreation, Kinesiology, Methods and Materials for Health Education, Officiating Athletics, Organization and Administration of Physical Education, Philosophy of Physical Education, Physical Education for the Handicapped, Physical Fitness, Physiology of Exercise, Recreational Leadership Activities, Recreational Sports; Stunts, Tumbling, and Tampoline; Team Sports, Techniques and Materials in Physical Education, Techniques of Physical Education Motor Activities, Tests and Measurements in Physical Education, Theory of Coaching, Therapeutic Gymnastics.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The professional athletic performer -- whether he is primarily the individual performer as the boxer, tennis player, or swimmer, or the team player as in baseball, basketball, or hockey -- requires transcendent playing ability. As he is in the public eye, any lapses on his part become news, and he is expected to have high standards of conduct. He is likely to be characterized by a fierce and unrestrained competitiveness, vast determination to win, and infinite capacity to absorb himself in perfecting his game and in the practice, thought, and devotion which keeps him in tip-top shape to play it, year after year. The adulation of the crowds becomes as necessary for him as food and drink. If he achieves star status, he is the man the fans flock to see by the hundreds of thousands. He lives for the magic moments when he is spurred on in his play by the roar of the crowds rooting for him, or when they spill over the bleachers in a headlong plunge to salute his victory. But he must be unshakably tough to take the brutal consequences of his mistakes in stride (for instance, a performer who made a wrong play suffered so much derision and hostility that he went to his hotel room and shot himself).

The personal style and motivations of the great athletic performers differ markedly. Some appear to be guileless and uncomplicated, showing no great worries about how they play the game. Others endure ceaseless practice to perfect each small facet of their sport, and are driven by a great urge to become the one best player, to get to the very top. Some are successful because they are colorful, picturesque in their performance, zany in their style, and with that undefinable something which makes them into folk heroes. Others succeed by being the workhorse, the indispensable man, with great ability to command the respect and loyalty of teammates. In contrast to the folk hero type, there is the big star who sees himself as a business man. Behind all of the starring performers are those in the sport who remain "faceless, almost nameless workers, toiling in the evening breezes without any separate identity or individuality."

Athletic skills have limited transferability to other occupations and performers may need to think of second careers very early in their working lives. A hazard in athletic performing, and particularly to boxers, is disability arising from injury in play, which can be permanent. In boxing, not only do some boxers receive fatal injuries, but a far larger number suffer the condition known as "punch-drunk" which affects gait and speech and produces general physical and mental debility.

RELATED LEISURE PURSUITS: Engaging in any sport, e.g., swimming and diving, figure skating, hiking, tennis, fencing, badminton; bowling, croquet, cricket, horseshoe pitching, volley ball. Being a lifeguard at pool or beach. Participating in or watching midget or stock car races, speed boat races, horse racing, track-team relay. Taking part in a sailing regatta. Doing acrobatics, tumbling; working out on the bars at the gym; weight lifting. Watching sports on television. Being a calisthenics instructor at camp, or coaching a "little league" team. Practicing target shooting. Being a caddy on a golf course. Soccer, vaulting, ping-pong, jai-alai-rodeo, bronco busting. Attending races or competitions: auto, horse, boat, rodeo, ski meets. Skin diving, hiking or walking; bicycling, motorcycling, scootering; driving (for pleasure or sport), horseback riding, flying, canoeing, mountain climbing, billiards or pool, track or cross-country running, archery; skeet, or trapshooting; skiing, snow or water.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious to adjust to constant involvement with people. Influencing in the "crowd-pleasing" ability of the superlative performer which makes him a folk hero. Self-control as the BOXER fighting on, ignoring his injuries and pain OR the BASEBALL PLAYER keeping his head when the other side tries to "rattle the opposition" OR the QUARTERBACK taking in stride the searing invective of the COACH after he has made a bad fumble OR contemptuously disregarding, as he plays his game, the hisses of pure hatred spewing out at him from rooters for the opposition. Valuative as when the BASEBALL PLAYER goes to bat, he studies the pitcher until he can read the tiniest gesture, capitalize on his smallest weakness. Rigorous in attention to every detail which might contribute to perfection of his game, as the BASEBALL PLAYER who makes special trips of several hundred miles to select personally the wood for his bats.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Abstract, Creative in high originality necessary to develop into a superlative athletic performer. Such a performer ponders hour after hour on the infinite variety of problem situations he might encounter in performing the sport and how he might solve them. He dreams up schemes to befuddle and outwit the opposition. Prestige in the adulation of fans. The great athletic star lives in a relationship to his public which is difficult for the ordinary person to understand. His followers may behave as maddened worshipers when he appears; he plays to roaring applause; he may achieve a kind of immutable glory, living on as a legendary figure in the minds of future generations.

ASTROLOGY AND SOOTHSAYING. Work, training, and leisure pursuits involving the analysis of character and prediction of the future on the basis of interpreting significance of planetary positions when charted on horoscope; crystal ball reading; or psychic readings based on palmistry, cards, telepathy, handwriting, or physical traits.

Explore D.O.T. OGA: 159 Entertainment and Recreation, n.e.c. (Astrologer, Fortune Teller, Mind Reader, Graphologist, Physiognomist, Phrenologist)

Related Career Possibilities: 130 Freelance Writers; 15 Occupations in Entertainment and Recreation

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Mathematics and science, general education, speech courses, and personality development might be helpful in these areas of work. There are no specific educational requirements for these occupations. However, astrology is said to be largely populated by college dropouts. Many standard reference works exist for these types of skills and their practitioners are generally self-taught or privately taught the art and practice involved.

RELATED LEISURE PURSUITS: Any amateur fortune telling, such as astrology, mind reading, or other practice which judges personality on the basis of physical features, handwriting, birth date, etc. Demonstrating astrology as a parlor game. Developing "do-it-yourself" astrology guides. Reading astrology magazines and journals, or other types of psychic or occult literature. Following daily horoscopes in newspapers. Reading the history of astrology and other ancient occult arts and their influence upon world leaders and world events.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Astrologers (excluding other kinds of fortune tellers) number over 5,000. They outnumber astronomers five to one, and are outnumbered only five to one by psychologists -- two scientific disciplines to which the pseudo-science of astrology is related in a bazaar sense. The modern science of astronomy is an off-shoot of the ancient art of astrology, "the science of the stars." Indeed some of the early astronomical giants were also astrologers, Tycho Brahe and Kepler among others. The cleavage between the two today is so great that any astronomer, even any amateur, is pained and winces when he hears the word.

Today astrology has more followers than ever before and no objective counselor can ignore an occupation so numerically strong, most particularly when it serves a function so alarmingly like his own, a backdoor relationship which is as painful to him as it is to the astronomer. The basic fact about astrologers and other fortune tellers is that they are engaged in "character" analysis and probing the human psyche. To accomplish this, they, as the counselors, use the self as a psycho-social instrument. Louis MacNeice in his impartial book on astrology calls the horoscope the "useful trigger to the intuition of the skilled astrologer, just as the ink-blot test may be for the psychiatrist, though neither may be able to explain what was triggered and why." Horoscopes are drawn by strict mathematical principles, but the interpretation is mostly by intuition and varies according to the astrologer. Some astrologers approach their work as mystics, others as scientists.

Except for the soothsayer who frequents the carnival or functions in another strictly amusement setting, the astrologer or psychic reader is not an entertainer at all nor does he hold a self-concept which relates him to entertaining. Neither does he project such an image to his clientele, who are said to number some ten million Americans. One has only to consider the phenomenal best-selling record of Jeane Dixon's, "The Gift of Prophecy" to realize the serious interest of so many and the immense influence the practitioner of the psychic has on public thought.

Not only was astrology influential in Babylon, Egypt, and Rome, it has been depended upon in modern times by public figures which range from Wallenstein to Hitler. The wedding of Hope Cooke to the Crown Prince of Sikkim had to wait a year for the Prince's astrologer to arrive at a suitable date. The great Irish poet, William Butler Yeats, was an enthusiastic astrologer. Theatrical figures such as Marlene Dietrich, Joan Fontaine, and Robert Cummings, take the "counsel" of astrologers into account in planning their lives. Many business tycoons and stock brokers plan their financial transactions on the basis of astrology.

The highest paid people in astrology and fortune telling are not those in individual analysis but those who write books and newspaper columns on astrology. The practice of astrology is licensed in only one city in the United States although the American Federation of Astrologers who certifies astrologers after they have passed a test and signed a code of ethics, seeks to "professionalize" the occupation and require universal and uniform licensing.

Marginality of role is the lot of practitioners in this field and the body of astrological techniques has no academic standing. The role ambiguities involved would create a serious adjustment problem for many people and be a deterrant to entering the occupation of astrology or related kind of activity.

ILLUSTRATIVE TEMPERAMENT ROLES: Dealing with people to relate effectively to the various people who come seeking counsel and an analysis of their problems. Influencing to induce confidence in clients and obtain their acceptance of analysis made. Valuative in that work is largely intuitive with, however, the capacity for objectivity for astrologers which permits the drawing up of horoscopes by strict mathematical principles.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Social Welfare in that these people generally are gifted in their sensitivity to the needs and fears of others -- indeed their success is largely based upon their perceptiveness of people in these terms. Abstract, Creative in that success in this line of work depends very much on a type of "diagnostic" approach to the study of personality and the application of intuition and imagination to achieve some insight into what may be hundreds of different factors (the bewildering array of mathematical data and variables of personal information) within the individual horoscope and come up with a "reading."

ENTERTAINMENT WORK, VARIETY. Work, training, and leisure pursuits involving the art of amusing or diverting the attention agreeably by such performances as acrobatics, juggling, pantomine, magic, variety acts, circus acts, puppetry, and the like.

Explore D.O.T. OGA: 159 Occupations in Entertainment and Recreation, n.e.c.

Related Career Possibilities: Consider other occupations in 15 Occupations in Entertainment and Recreation

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Acrobatics, Highwire, Marionette Production and Stage Design, Pantomine for the Actor, Puppetry, Sound Effects; Stunts, Tumbling, and Trampoline; Ventriloquy.

RELATED LEISURE PURSUITS: Reading about magic and famous magicians; learning magic and tricks to play on friends and entertain at parties. Being a subject for hypnosis. Designing puppets and producing a show. Doing impersonations or performing a skit at a party or a meeting. Originating an "act" and entering an amateur hour. Planning campfire stunts. Taking part in community minstrels or school entertainments. Telling fortunes with crystal ball, tea leaves, cards, or reading palms. Designing a "dummy" and learning ventriloquism. Attending the circus. Making a comedy act. Leading games at a party. Participation in community variety shows. Attending night clubs and closely observing floor shows.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): This is a field of highly specialized specialties, each with a long tradition and demanding techniques which may be acquired only through rigorous discipline and perfectionist training, and for many specialties, beginning early in life (e.g., high wire performers). Many of the specialties require displays of physical agility and daring which are possible only for people who have achieved a bodily control and perfection of performance which approaches infallibility. Such performing becomes possible on the basis of practice repeated until the sensitivity to cues and correct judgments become instinctive, "second nature." Often, these types of performers come from "performing families," (e.g., the Waldesians of high wire fame, with performing traditions which span several generations). In such cases performers are "born into their work." Often in variety entertainment work, performers acquire status in the field by a close relationship to an established performer or in an environment where there is an opportunity to watch, learn, and make the proper connections. Performers with developed "acts" may audition for openings in such areas of opportunity as musical reviews, night clubs, television, or films. The careers of many workers are guided by agents who work closely with theatrical booking agents.

ILLUSTRATIVE TEMPERAMENT ROLES: Dealing with People. These artists usually perform before an audience (although their performance may be televised or filmed) and their capacity for personal interaction with their audience is in a sense an aspect of their performance. Valuative in intuitive approach to life. Rigorous in perfectionist standards in their work. For performers engaged in perilous feats of daring, as the high wire artist or the spectacular jumper, self-control in that success of performance depends absolutely on a calmly reasoned approach at all times.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas in importance these people attach to communicating their artistic message to an audience and wresting recognition from it; otherwise they feel their performance to be wasted. Abstract, Creative in that most of these specialties demand the employment of imagination and many skills, whether it is the act of the song-and-dance man or the puppet master bringing his puppets "to life" by taking them through amazing and intricate movements. Prestige in that recognition for their artistic achievement is life blood to these types of performers and they are often rewarded in terms of renown.

ENTERTAINMENT WORK, PROMOTIONAL AND DISPLAY. Work, training, and leisure pursuits, whose purpose is to entertain people, in which the qualification for the work relates chiefly to the person's ability to function as a "personality" in some unique or specialized sense, as being able to wear clothes well; speech ability to extemporize, impersonate, mimic; carry out some stunt as fire eating or hypnotizing; or display some physical oddity, such as obesity or a monstrosity of some type.

Explore D.O.T. OGA: 159 Occupations in Entertainment and Recreation, n.e.c.

Related Career Possibilities: 297 Demonstrators and Models; 299 Merchandising Occupations, except Salesmen, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Inasmuch as some "personality" asset is the qualification for work of this nature, and the personality requirements are very diverse, no particular courses can be listed.

RELATED LEISURE PURSUITS: The particular skills may very well develop out of unemployed activity; odd jobs of a merchantile nature, such as serving as parade character or store Santa Claus; odd jobs, telling fortunes, or performing stunts around a circus, amusement park, boardwalk, fair, sideshow, or similar exhibition.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Qualification for work of this nature depends on some personality asset such as appearance, being able to impersonate a storybook character, having a flair for wearing costumes to attract attention to a public event of some sort, demonstrating a product in a store when the qualification is chiefly ability to attract people's attention.

ILLUSTRATIVE TEMPERAMENT ROLES: Dealing with People as many jobs require a capacity to be outgoing and spontaneous, to "ad-lib." Subjectivity or self-expression is basic in that work roles are based on individual personality traits.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas in such roles as impersonating storybook characters (Snow White, Mickey Mouse, etc.), and in effectively assuming roles such as parading in special costumes to advertise a commodity or service. Self-Control to perform under stress for various kinds of freaks so that they have the ability to call attention to their unnatural ugliness or grotesqueness, but a personality toughness which survives ridicule or disgust by spectators and maintains sufficient emotional stability to function.

BASIC VOCATIONAL DIRECTION

CLERICAL

Secretarial and Stenographic
Typing
Correspondence and Copy Editing
Personnel Work (Clerical)
Filing and Cataloging
Computing
Bookkeeping and Related
Paying and Receiving
Production Record Work
Clerical Machine Operating
Stockkeeping
Scheduling
Coding and Decoding
Underwriting
Information and Message Distribution
Duplicating Machine Operating

CLERICAL (GENERAL FIELD DESCRIPTION)

CLERICAL WORK is typically concerned with written or printed communications, records, and other forms of verbal or numerical data. The worker deals with data through such processes as recording, computing, checking, classifying, coding, sorting, compiling, filing, and mechanical reproducing. These activities ordinarily require ability to perceive verbal or numerical symbols readily and accurately and to comprehend their meanings. Although clerical work is mainly concerned with data, workers may be required to relate in various ways to people, to business machines, and to materials being checked, handled, exchanged, or otherwise dealt with.

Because clerical occupations tend to require facility in linguistic and mathematical processes, the mental ability and educational development standards for clerical work are relatively high. However, because clerical workers do not normally originate the data with which they work, they are not usually called upon to exercise high levels of creative imagination, as, for example, in literary work, or independent judgment in contributing to or using organized knowledge. This distinguishes clerical occupations from those occupations in ORGANIZED KNOWLEDGE that are concerned with verbal or numerical data. Some planning enters into many types of clerical work, but when planning is a major function, the occupations are considered MANAGERIAL. Public contact functions appear strongly in CLERICAL WORK, but are secondary to the numerical and verbal functions. When the public contact function is primary, the occupations are considered PUBLIC CONTACT.

The rapid and widespread development of recording, calculating, duplicating, and other machines, ranging from manually operated typewriters to electro-mechanical equipment such as bookkeeping machines, produced a revolution in clerical methods during the first half of the twentieth century. This revolution is currently being refined by high-speed electronic data-processing equipment. Machine-operating jobs have continued to be considered as clerical work whenever the worker must be able to deal intelligently with the data itself, in such functions as preparing it for the machine, checking or inspecting the results of machine operation, or using the machine as an aid to computing, recording, or other clerical functions not performed by the machine.

As the use of electronic data-processing equipment is applied more and more in organizations which process mass clerical data, new clerical jobs are being created, and many others are being modified in line with methods imposed by the system of automation employed. Routine clerical jobs are being diminished and more highly skilled ones are being increased.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: English, Mathematics, and all Commercial Courses.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): People in clerical occupations have been called the "transmitters of the printed culture." They typify "white-collar" values and the "white-collar" style of life.

RELATED LEISURE PURSUITS: Any school, club, or other voluntary activities involving numerical or verbal record keeping, or filing.

ILLUSTRATIVE TEMPERAMENT ROLES: In clerical work the kind of almost errorless accuracy that we see in bills, statements, receipts, checks, audits, neatness, orderliness, and willingness to take pains. This discipline comes easily to the temperament which strives to be rigorous, i.e., Precisely Attain Set Limits, Tolerances, and Standards. The habits necessary for the accuracy must be effective in what are frequently Repetitive Operations in which alertness to discover and prevent error is difficult to maintain; hence the clerical worker needs to be able to Adjust to Routine. Nevertheless, many clerical jobs involve the worker in Variety and Change: keeping track of a dozen things at once - telephone calls, visitors, reports, letters, files, meetings - and he must be Versatile to shift smoothly from one task to another.

Clerical jobs on higher training time levels require independent judgment in carrying out complicated procedures and regulations. This type situation calls for persons who can be depended on to make decisions in line with prevailing rules and regulations, i.e., Objectivity to make decisions on the basis of measurable, verifiable criteria.

Many clerical jobs exist for the purpose of carrying out the "paper work" incident to the job of an administrator, technician, or professional practitioner (e.g., secretary, appointment clerk, doctor's assistant, messenger, and the like). Such workers are expected to make life easier for the employer by saving him time and effort. They need the ability to respond readily to another's wishes, personality, and way of doing things, because much of their day's work is done Under the Specific Instructions of the employer. Persons who score "extremely dominant" on a dominance-submission scale should consider carefully before choosing this type of clerical job. For persons who like functioning in an assistant's role, however, such jobs may be ideal.

The clerical worker is frequently required to Deal with People (co-workers, the public, or both) for a considerable part of each day. He must be sufficiently Gregarious to adjust to this.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Because clerical workers do not normally originate the data they process and work within a framework of procedures which are already systematized, an interest preference for the Routine, Concrete Organized leads to job satisfaction, but a preference for the Abstract, Creative may bring discontent.

The clerical field is particularly rewarding to those who have a strong Business Contact interest. It provides a "white collar" environment and the opportunity to be well-groomed on the job. Many of the jobs make it possible to meet and deal with interesting and prominent people. A disposition to be cheerful, to say "thank you" with a smile even at the end of a long and trying day, is always an asset to the would-be clerical worker. Those who find this difficult are not likely to be happy in the typical business office.

SECRETARIAL-STENOGRAPHIC. Work, training, and leisure pursuits which relate to the field of work whose basic technical competency involves a system (several exist) of pencil or machine shorthand by which spoken discourse is recorded in terms of a phonetic symbol system and in turn transcribed into clear text by means of a typewriting machine.

Explore DOT OGA's: 201 Secretaries; 202 Stenographers; 169 (Administrative Secretary, etc.)

Related Career Possibilities: 203 Typists; All Others in 2 (Clerical)

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED MAJORS, COURSES, AND SPECIALIZATIONS: Three levels of training exist for this field of work: (1) Most high schools offer programs in commercial subjects and the good student may become well prepared through commercial high school training. (2) Business schools. These vary greatly in comprehensiveness. (3) Many colleges and junior colleges offer training in the field of secretarial work and some grant a B.S. in Secretarial Science. Many high schools offer night school training programs.

On any level of training, a knowledge of English, office practice, mathematics, business machines, and business law are essential. Training may include cultural subjects such as social science, literature, and psychology; courses in fundamental principles and practices of business, such as business law and bookkeeping: or technical courses, such as foreign languages, medical, legal, or other specialized terminology. Those who aspire to secretarial positions in the diplomatic corps, science, law, medicine, engineering, etc., find a four-year college training program an asset. The person interested in straight stenographic work only is adequately prepared by training in stenography, typing, and business English. The minimum dictation speed required to qualify for stenographic work is usually 80 wpm. Shorthand reporting usually requires a minimum of 120 wpm and the court reporter may need to take down proceedings at a rate of 250 wpm or greater.

RELATED LEISURE PURSUITS: Any school, club, or other voluntary activity involving secretarial duties. Serving as chairman or member of such committees as Editorial, Publications, Periodicals, Publicity, Library, or Permanent Records. Taking notes of lectures or minutes of meetings. Keeping attendance or collection records for organizations. "Helping out" - ushering, looking up references, making phone calls. Taking part in sports, dramatic, or social events. Meeting new people - making and keeping many new friends. Taking pains with theme papers. Buying supplies, gifts, mailing letters, and other chores, for others. Writing neat letters. Writing or editing school or club paper. Obtaining speakers for club. Taking lead in organizing picnics, outings, dances. Writing essays and compositions. This field accomodates persons of widely varying personalities with a wide array of tastes in kinds of leisure pursuits which may invite their interest.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The shorthand competency has wide ranging usefulness as a skill. It can be combined with other skills or pursued intermittently and hence combined with a career of homemaking. A wide range of complexity of occupations using it offers differential opportunities for individuals with a wide range of abilities. It is applied in straight recording work at speeds ranging from that of the stenographer who takes slowly spoken dictation all the way up to the court reporter who is responsible for recording every word spoken during court sessions. It is used by the "Girl Friday" who functions as a confidential assistant to an employer and by the executive secretary who has broad responsibilities in planning, decision-making, and administration.

Although the stenographic job may be routine and confining, the secretary encounters few dull moments in her busy and unpredictable day. The secretarial role has frequently been stereotyped as "the power behind the throne" - ranked even above actress and nurse as a "glamour occupation." However, stresses and tensions may accompany the secretarial job. The secretary functions as "the eyes and ears" of her boss. In helping him do his job, a hundred and one details, decisions, and errands fall on her shoulders. Her job is working for success. She does his "leg work." She carries out his plans, not her own. She may work under much pressure, take off her hat as she is leaving the office for a dinner engagement to take the dictation he rushes in to give her as a conference breaks up, and turn in a neatly typed letter before she leaves the office, after canceling her dinner plans. Success in these jobs is influenced to a large extent by the person's adaptability to conditions and ability to conform to and accept the values of the employer. Strong individuality is not an asset in the work.

Intelligence, verbal, clerical, numerical, form perception, motor coordination, finger dexterity, and manual dexterity in some combination are useful aptitudes.

ILLUSTRATIVE TEMPERAMENT ROLES: Versatility for the secretary with the many-sided job and adaptability to repetitive work for the stenographer engaged in straight dictation and transcribing. The ability to adapt to working under specific instructions is important for these jobs require the worker to gear performance to pleasing employer rather than self in way work is done. The person with strong dominance tendencies may not be happy in the work. Gregarious, especially for secretaries who are involved in almost constant interaction with other people. Self-controlled to be unruffled in many trying situations such as having to make sudden changes in personal plans to accomodate work schedule of employer. Valuative especially for secretaries who must make many personal judgments such as deciding when the boss is too busy to be interrupted, the importance of callers, when to schedule appointments, etc.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact for the secretary who represents her employer on the telephone and in meeting callers. The tone of the office and to an extent, her employer's success, are dependent upon effectiveness of her "good will ambassador" role. People and Communication of Ideas in that these workers must be able to absorb the thought content of the correspondence and dictation with which they deal and in a sense of appropriateness of both written and oral speech. Prestige, especially for the secretary often meeting prominent and interesting people.

TYPING. Work, training, and leisure pursuits involving recording information by means of typewriting machines. (Includes the routine typing of verbal or numerical copy from written notations or such mechanical devices as dictaphones or recordak projectors, using any of a variety of machines having a standard typewriter keyboard.)

Explore DOT OGA: 203 Typists

Related Career Possibilities: 201 Secretaries; 202 Stenographers; Other Occupations in 2 (Clerical)

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Alphabetizing, Clerical Procedure, Electric Typewriter Operating, English Composition, English Usage, Grammar, Office Practice, Penmanship, Recordak-Machine Projecting, Spelling, Transcribing Machine Operating (Dictaphone, Ediphone), Typing, Vocabulary.

In the tasks involved, particularly procedures peculiar to activity. Typing courses sometimes offered as on-the-job training. Typing skills may be combined with a wide range of other special types of training. It is valuable for all writing and journalistic occupations, for accountants, advertising people, and various professional specialists whose work involves writing reports, etc. The typing of subject matter which is dull and uninteresting to typists can be an occupational stress.

RELATED LEISURE PURSUITS: Serving as corresponding or recording secretary for social, church, school or civic group. Summer work, part-time work in an office.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Able to apply work principles and practices involving competence in the touch operation of a typewriter keyboard; procedures for setting up and copying correspondence, reports, drafts, forms, manuscripts, and similar; techniques for achieving neat typing copy; and English usage.

Although the efficient use of a typewriter to record information is the essential skill of a typist, the term typist actually subsumes a wide variety of jobs. The work of the typist may range from simple copying of material already set up to setting up and typing complicated statistical tables, technical papers, and manuscripts.

The typist may be called a clerk-typist and do filing, bookkeeping tasks, sort mail, record information in long hand, and serve as a receptionist.

Other typists specialize in transcribing from a dictating machine. Such a typist may require greater skill in spelling, punctuating, and paragraphing than a stenographer as the typist must perform those correctly during the process of typing and cannot review notes as can a stenographer.

The Recordak-Projector operator must be able to copy on a typewriter or billing machine, data projected on a small screen, as well as operate the Recordak-Projector itself.

Although some types of general clerical work utilize slow typists with a speed of less than 40 wpm, that is the minimum with acceptable accuracy required for a typist job. Top typists may make speeds of over 100 per minute on an electric typewriter.

The typist preparation is valuable in relation to other occupations which may be suitable for the person with some additional training. Examples are secretary, stenographer, machine bookkeeper, court reporter, stenotype operator, varitype operator, teletype operator, or operator of other type of machine which has keyboard. Other clerical-related jobs which the typist may aspire to are public contact jobs such as social secretary, receptionist, or personnel clerk.

ILLUSTRATIVE TEMPERAMENT ROLES: A typist job which involves many related clerical tasks, such as reception, filing, answering the telephone, and making computations, may require versatility to shift easily from one task to a quite different one, but the straight typing job is one in which the worker must be adaptable to repetitive work. A typist, of course, may move from the varied to the repetitive typing job and may need the capacity to make both types of adjustments. Adaptable to specific instructions for the typist, depending upon the practices of the particular office, may be required to conform to very detailed instructions and be willing to do the work over for no reason except the supervisor's change of mind. Rigorous in maintaining high typing standards so that letters, reports, or manuscripts are impeccable in appearance.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact for the typist who is required to deal with the public or extensively with fellow employers. The typist in this position is expected to be appropriately groomed at all times and to be personable in total personality effect. Routine, Concrete Organized for the majority of typing jobs which occur in offices in which the practices are well standardized.

CORRESPONDENCE AND COPY EDITING WORK. Work, training, and leisure pursuits which involve composing correspondence and related documents for the purpose of obtaining or supplying information or editing or proofreading before publication or mailing of prepared copy for accuracy of syntax and typography. Usually involves the use of typewriters to transcribe materials.

Explore DOT OGA's: 204 Correspondence Clerks; 209 Stenography, Typing, Filing, and Related Occupations, n.e.c.

Related Career Possibilities: 10 Occupations in Museum, Library, and Archival Sciences; 13 Occupations in Writing; 20 Stenography, Typing, Filing, and Related Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Advertising, Business Administration, Business Correspondence, Business Psychology, Editing, English Composition, English Courses, English Usage, Grammar, Graphic Arts, Journalism, Penmanship, Printing, Proofreading, Spelling, Vocabulary.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Knowledge of correct English usage, including grammar, spelling, punctuation, capitalization, abbreviation and compounding; type styles, sizes and spacing; and proofreader's markings. Ability to adhere to typographical standards and procedures for setting up correspondence, reports, drafts, and forms. Sense of congruity or incongruity in words and sentences and ability to use a variety of English words and expressions effectively. Sense of style and approach fitting to written material with which is dealing and the reading comprehension needed to correctly interpret the subject matter involved. Sense of balance and proportion in layouts. Sustained alertness in detecting errors and discrepancies. In editing and proofreading, eye stamina sufficient for sustained, close, fatiguing work.

Intelligence, verbal aptitude, clerical perception, motor coordination, and finger dexterity in some combination are useful aptitudes.

RELATED LEISURE PURSUITS: Revision and preparation of manuscripts for publication for club, school, etc. Serving as corresponding or recording secretary for social, church, school, or civic group; as chairman or member of such committees as Editorial, Publications, Periodicals, Publicity, Library, Permanent Records, or similar offices. Making collections, such as books, stamps, matchbook covers, etc. Writing for contests. Working crossword puzzles. Taking notes on lectures and meetings. English studies. Taking pains in choice of words. Writing essays and compositions.

ILLUSTRATIVE TEMPERAMENT ROLES: Versatile for some jobs which involve a wide range of activities. Others, such as proofreading, require adaptability to a confining, nonvarying set of duties. Valuative in taking pains with the choice of words, in sense of appropriateness or inappropriateness of words and sentences, and in modifying writing for style, diction, or other factors by elimination or rearrangement. Objective in gathering data from files, records, and other sources of information as a basis for the content of correspondence OR in verifying references, quotations, and the like, OR in seeing that materials are published according to specifications. Rigorous in adherence to typographical standards and procedures when setting up correspondence, reports, drafts, and forms and in reviewing and editing prepared copy for grammatical, typographical, and compositional errors and for conformity to style regulations.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact as in securing approval of customers or others for format before publication of material. People and Communication of Ideas in that the work requires a keen interest in and aptitude for words and ideas associated with them.

PERSONNEL WORK. Work, training, and leisure pursuits related to clerical phases of personnel work, including helping job seekers fill out application forms; supplying information regarding company hiring policies or requirements; investigating applicant's work history; and completing and keeping current employment records, such as recruitment, training, promotion, attendance, retirement, and discharge of employees.

Explore DOT OGA: 205 Personnel Clerks

Related Career Possibilities: All Others in 2 Clerical Work; 166 Personnel and Training Administrative Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: A very thorough general education is needed in this work. High school courses in business subjects are useful, but in addition aspirants do well to have had high school courses in literature, social studies, history, geography, mathematics, and an extensive background in English. Jobs are seldom filled by other than high school graduates and college training is an asset.

Other courses: Business Organization and Management, Business Psychology, Interviewing Techniques, Oral English, Personality Development, Public Relations, Public Speaking, Reception, Telephone Usage. Any courses specifically related to personnel operations.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): People in this work require a knowledge of English usage, arithmetic calculation, and effective techniques for receiving, meeting, and dealing with people in relation to employment situations. A pleasant personality, genuine liking for and adaptability to different kinds of people, ability to meet and converse easily with them, poise, good manners, tact, cheerfulness of disposition, and a sense of appropriate grooming are essentials. The carrying out of many transactions on a verbal basis requires memory for faces and names, a pleasant, clear speaking voice, an adequate command of oral English, and good hearing.

RELATED LEISURE PURSUITS: Promoting causes (welfare, charity, political) or activities (sports, dramatic, social). Club membership, sports activity, or other pursuit involving meeting and associating with people, particularly those concerned with obtaining or giving information or adjusting differences of opinion. Serving on Membership, Reception, or other committee devoted to greeting, assisting, or similarly contacting people. Ushering and giving information to persons at bazaars, fairs, auctions, and similar events. Serving as marshall or usher at church or school function. Assisting in election campaigns. Volunteer collecting in charity drives or similar activities. Participating in round table discussions. Serving as recording or corresponding secretary for group. Treasurer of club, church, or social group. Keeping attendance or collection records for organizations.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious as these workers are largely involved in the human relationships within an organization and their conduct is very influential in keeping such relationships smooth. Objective as in reviewing credentials to establish eligibility for naturalization, verifying decisions on the basis of the rules and regulations which prevail in the situation, or in computing grade-point averages to establish students' qualifications.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in interviewing job applicants, informing applicants of company policy, checking references by telephone, and making investigations. People and Communication of Ideas as the PERSONNEL INVESTIGATOR who investigates background and personal characteristics of persons applying for employment to obtain history of illnesses and moral and social behavior.

FILING AND CATALOGING. Work, training, and leisure pursuits mainly concerned with inserting or extracting particular data into or from various types of records for keeping files, compiling lists, or providing and cataloging information.

Explore D.O.T. OGA's: 206 File Clerks; 209 Stenography, Typing, Filing, and Related Occupations, n.e.c.

Related Career Possibilities: 201 Secretaries; 202 Stenographers; 203 Typists; 204 Correspondence Clerks; 205 Personnel Clerks

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

PERTINENT INFORMATION (Special requirements, cultural and sociological data): These workers must be able to read or examine information to be filed or catalogued, code or otherwise identify relevant data; insert extract data; file records; classify data in standardized ways; compile lists or reports from classified data; and catalog identifying information according to a prescribed system.

They are required to have a knowledge of the particular records, the systems by which they are filed, the methods of extracting, coding, and cross-indexing relevant data, use of card catalogues and general reference books, the uses for which the compilations are made, and fundamental English. Good memory for names and numbers. Ability to memorize simple segregations of subject matter or filing method breakdowns. Good reading comprehension. Aptitudes of Intelligence, Numerical, Clerical, Manual Dexterity, Motor Coordination, and Form Perception in some combination may be useful.

RELATED COURSES: Commercial work in high school is an advantage. Workers may be hired on the basis of general education alone. Courses: Alphabetical, Chronological, Decimal, Geographical, or Subject Matter Filing Systems; Alphabetizing, Catalogue Use, Coding, Dewey Decimal Filing System, Document Assembly, Indexing, Library Techniques. All English courses.

ILLUSTRATIVE TEMPERAMENT ROLES: Valuative when reading materials and classifying them according to subject matter or evaluating their relevancy. Objective in cataloguing identifying information according to a prescribed system. Rigorous identifying information according to a prescribed system. Rigorous accurate assignment of codes or other identifying data.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Routine, Concrete Organized in working with established systems and liking to deal with data in a standardized way. Business Contact for jobs which may involve dealing with public. For some jobs in the field, Abstract, Creative in that considerable imagination may be involved in connecting facts and thinking of relationships.

COMPUTING. Work, training, and leisure pursuits involving accurate calculation by arithmetic or statistics. Calculating machines, slide rules, or complicated tables may be used.

Explore D.O.T. OGA's: 211 Cashiers; 213 Automatic Data-Processing-Equipment Operators; 217 Account-Recording-Machine Operators; 219 Computing and Account-Recording Occupations, n.e.c.

Related Career Possibilities: 210 Bookkeepers; 212 Tellers; 214 Billing Machine Operators; 215 Bookkeeping Machine Operators; 22 Material and Production Recording Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: In high school, commercial courses are important for the person planning to enter this field of work. Business school training is desirable and necessary for many of the jobs. However, opportunity also exists for entry into lower jobs which may lead to progressively more responsible jobs.

Courses: Accounting, Algebra, Actuarial Procedures, Banking, Bookkeeping, Business Education, Business English, Budget Systems, Calculating Machine Operating, Commercial Arithmetic, Commercial Law, Credit, Finance, Insurance, Office Procedure or Office Practice, Penmanship, Rapid Calculation, Statistics, Taxation.

RELATED LEISURE PURSUITS: Achievement in school mathematics courses. Keeping club or class bank account. Computing baseball, bridge scores, and the like. Keeping attendance or collection records for organizations. Making out budgets. Figuring prices, invoices, discounts, etc. Working out puzzles in figures. Following sports statistics. Serving as treasurer of club, church, or other group.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): A flair for figures is the first requisite for job satisfaction in this field. People who are successful in the work must also possess the ability to be both accurate and rapid in computing operations and be adaptable to concentrating on details for long periods. Neatness and carefulness are indispensable habits. They must have the patience required to check and doublecheck work and spend hours, if necessary, to locate a computational error.

ILLUSTRATIVE TEMPERAMENT ROLES: Rigorous in accurate calculation and adherence to established statistical principles in setting up frequency distributions, standard deviations, etc., or in figuring applicable insurance rates from actuarial tables. Adaptability to Routine in working with routine additions, subtractions, etc.; comparing, checking and copying tabular data.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Things and Objects interest as this is expressed by activities involving chiefly numerical transactions. Business Contact interest in maintaining well-kept personal appearance, poise and good manners when meeting and dealing with the public. Routine, Concrete Organized interest in working with specific precise details in standardized statistical measures, quoting tariff rates, compounding interest, etc.

BOOKKEEPING AND RELATED. Work, training, and leisure pursuits concerned with maintaining the financial books of a business.

Explore DOT OGA: 210 Bookkeepers

Related Career Possibilities: 21 Computing and Account-Recording Occupations; 22 Material and Production Recording Occupations; 160 Accountants and Auditors; 161 Budget and Management Analysis Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Courses including the theory and principles of bookkeeping as well as the background information useful in understanding the basic principles of business organization and economic structure. A typical curriculum includes several of the following courses: Accountancy, Advanced Bookkeeping, Bookkeeping Machines, Business Arithmetic, Business Economics, Business Law, Business Organization, Commercial Law, Elementary Bookkeeping, Junior Business Training, Office Practice, Vocational Bookkeeping.

RELATED LEISURE PURSUITS: Liking for figures, for sedentary pursuits, an office or business environment, "paper work" duties. Treasurer of club, church, or social group. Keeping attendance or collection records for organizations. Computing bridge scores, or similar. Maintaining a budget. Figuring prices, invoices, discounts, etc. Working out mathematical puzzles. Following sports statistics. Part-time cashiering work.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Bookkeeping is often thought of as "working with figures." The bookkeeper does work with figures continually, recording them, adding them, subtracting them. A fairly keen aptitude for and interest in working with numbers is required. A thorough grounding in business arithmetic is the best basic preparation for bookkeeping training. However, bookkeeping is broader than computing. It is essentially a classifying activity. It differs from other kinds of classification in that the subject matter to be classified is described numerically rather than verbally. Double-entry bookkeeping systems are based on a formalized theoretical structure which uses logic as an analytical tool. The bookkeeper as a first step analyzes the record of the business transaction to determine whether it is a credit (an entry on the right-hand side of an account indicating reduction of an asset or addition to a liability) or a debit (an entry on the left-hand side of an account indicating an addition to an asset or a reduction of a liability. These records may be in the forms of bills, checks, invoices, cash receipts, etc. As a second step, the transactions are entered in appropriate journals and periodically transferred to the ledger (a final book of entry in business transactions). The bookkeeper, working on his own, or under the direction of an accountant, makes profit and loss statements and balance sheets which show the financial condition of a business.

The bookkeeper is the most important nonprofessional job in the accounting phase of a firm's business. Bookkeepers often advance to administrative levels within an organization. The qualities most generally required of bookkeepers are scrupulous honesty in money matters (they are often bonded), ability to adjust to routine work and at the same time to pressure in emergency situations, stick-to-it-iveness to get the job done (for instance, staying with the work to find a minor error such as a misplaced decimal), regard for regulations and strict adherence to them, and ability to concentrate regardless of distractions. Most bookkeepers operate office equipment such as typewriters, computers and adding machines, bookkeeping machines, files, and check writers. Ability to write neatly and legibly, particularly figures. The element of confinement makes the work undesirable to some. Work may be straining on eyes. The fact that work is so closely geared to the factual and concrete makes it seem dull to some persons. However, successful bookkeepers themselves usually see their work as highly interesting.

Intelligence, numerical aptitude, clerical perception, motor speed, and finger dexterity are useful aptitudes in bookkeeping work.

ILLUSTRATIVE TEMPERAMENT ROLES: Versatile to perform diverse tasks such as classifying financial records with reference to entry to be made; posting and balancing journals and ledgers; compiling reports, coordinating information for trial balances and special reports; and performing such arithmetic operations as computing discounts, tax returns, interest accruals, commissions on sales, and wages from time records. Objective in disposition to avoid personal interpretation of facts, to analyze and classify financial data strictly in terms of the creiteria of formal bookkeeping principles. Rigorous in that bookkeeping is a discipline requiring neatness, orderliness, and willingness to take pains in checking data, often in repetitive situations in which alertness to discover and prevent error is difficult to maintain. The bookkeeping mind (in contrast to the disposition of the statistician, for instance) desires to be scrupulously accurate in order to make things add up, come out right, balance precisely, no approximations.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact for bookkeepers who must meet the public with poise and good manners, and for those in large offices where office relationships require capacity to work smoothly with others. Working with Machines, Processes, Techniques in that bookkeepers by their own individual effort and knowledge of the principles of formal bookkeeping methods control the organization of their work. They carry a large amount of self-responsibility.

PAYING AND RECEIVING. Work, training, and leisure pursuits involving paying out or receiving money or securities.

Explore D.O.T. OGA's: 212 Tellers

Related Career Possibilities: 210 Bookkeepers; 219 Computing and Account-Recording Occupations, n.e.c.; 23 Information and Message Distribution Occupations; 211 Cashiers

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: In high school, commercial courses are important for the person planning to enter this field of work. Business school training is desirable and necessary for many of the jobs. However, opportunity also exists for entry into lower jobs which may lead to progressively more responsible jobs.

Courses: Banking Law, Business Arithmetic, Business Economics, Business Organizations, Commercial Law, Financial Management and Investments, Handling Money and Checks, Monetary Systems.

RELATED LEISURE PURSUITS: Treasurer of club, church, or social group. Keeping attendance or collection records for organizations. Making out budgets. Figuring prices, invoices, discounts, etc. Working out puzzles involving mathematics. Computing bridge scores. Following sports statistics.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Knowledge of the handling of money or securities, the security conditions under which money or securities are handled, the characteristics of valid (as distinguished from counterfeit) monies or securities, and business arithmetic. Ability to stand for long periods. Pleasing and affable manner. Well-groomed appearance. Honesty, high sense of responsibility. Ability to concentrate amid distractions. Ability to make prompt and accurate decisions in handling transactions. Keen memory for faces, names, signatures, and figures. No matter how small the bank, there is at least one teller to receive and pay out money and record these transactions. Tellers must meet standards set up by bonding companies. Tellers may advance to administrative levels in banking establishments.

ILLUSTRATIVE TEMPERAMENT ROLES: Rigorous as is expected to achieve unerring accuracy in money transactions. Objective in verifying the identity of persons to whom makes payment, verifying deposits and in other situations in which he is certain that his decisions are backed up by verifiable data.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in constant dealing with public. The public to a great degree judges the bank by their impressions of the tellers.

PRODUCTION RECORD WORK. Work, training, and leisure pursuits involving checking, recording, reporting, and expediting production progress.

Explore DOT OGA's: 221 Production Clerks; 223 Stock Clerks and Related Occupations; 224 Weighers

Related Career Possibilities: All Other Classifications in 2 (Clerical)

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Bookkeeping, Classification of Commodities; Classification of Stock Items, Count, Cycle, Perpetual, or other type of Inventory; Document Control Procedures, Economic Geography, Established Systems of Commodity Classification, Introduction to Business Law, Local and National Shipping Regulations, Railroad Rates, Routing and Classification Problems Involved in the Movement and Transportation of Merchandise, Shipping Procedures, Shipping Rates and Routes, Shipping Transportation Details and Problems, Space Layout and Utilization, Stock Accounting, Stock Nomenclature and Identification, Stenciling Operations, Storage and Storekeeping, Transportation Costs and Shipping Routes, Types of Transportation, Use of Stock Catalogs, Warehousing.

RELATED LEISURE PURSUITS: Keeping records for social, athletic, and similar groups. Being property manager for club, church, or civic group. Working with figures. Serving as treasurer for any group.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Legible handwriting. Ability to acquire considerable information regarding type, quantity, value, locations, conditions, and similar data regarding production items. Ability to synchronize flow of paper work with a complicated schedule of production. Planning and organizing ability. Extensive knowledge of the production process for a particular item as well as control characteristics of its various stages of production relative to time and quality; ability to understand production detailing and scheduling.

In some combination, intelligence, numerical aptitude, clerical perception, motor coordination, and finger dexterity are useful aptitudes.

ILLUSTRATIVE TEMPERAMENT ROLES: Objective in adherence to specifications in detailing shop orders. Rigorous in attention to detail required in coordinating flow of materials and tools with production schedules. Valuative in scheduling sequence of operations, which requires considerable knowledge of the particular production situation as a basis for making judgments.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact to work smoothly with others in a "white collar" capacity. Routine, Concrete Organized in following standardized methods of checking and expediting production flow.

CLERICAL AND SALES
CLERICAL

CLERICAL MACHINE OPERATING. Work, training, and leisure pursuits which cover a wide variety of clerical machines, ranging from the manually operated adding machine to the complex electronic computer (but excluding typewriting machines which duplicate rather than process clerical machines).

Explore DOT OGA's: 208 Misc. Office Machine Operators; 213 Automatic Data-Processing Equipment Operators; 214 Billing-Machine Operators; 215 Bookkeeping-Machine Operators; 216 Computing-Machine Operators; 217 Account-Recording Machine Operators, n.e.c.; 219 Computing and Account-Recording Occupations, n.e.c.

Related Career Possibilities: All Other Occupations in 2 (Clerical)

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: The more routine jobs may not require high school graduation, but it is basic for most. The more complex jobs in electronic computer operating usually require specialized training. Persons for these jobs are frequently screened by tests which measure their capacity to reason logically. High school commercial courses such as bookkeeping, typing, office machines, and mathematics are valuable.

RELATED LEISURE PURSUITS: Treasurer of club, church, or social group. Computations such as keeping attendance records, figuring out budgets. Working out puzzles in figures.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): These are jobs which require a combined interest and aptitude for working with clerical data and using machines in work. Some of the offices where these jobs occur are noisy and the offices may be crowded with machines. Office machine operators may be employed to operate only one machine or a variety. Some machines are operated by pressing keys on a keyboard. Examples are billing, adding, calculating, and keypunch machines.

Other machines such as tabulating and mailing machines have to be set up, after which the worker merely observes their operation for malfunction. Operators of electronic computer equipment follow instruction sheets and push control buttons which may process magnetic tapes or punch cards or transfer information from one to the other. The procedures involved in accomplishing this work vary from one computer system to another and they may be more difficult to learn than the operation of the machine itself. Intelligence, numerical aptitude, spatial aptitude, clerical perception, and verbal aptitude in some combination are useful aptitudes.

ILLUSTRATIVE TEMPERAMENT ROLES: The operator of several machines may need to be versatile and the operator of a single machine adaptable to repetitive work. Objective in working according to the standards of the particular computer system and identifying situations which could prevent the system from operating properly. Rigorous in verifying accuracy of operations - one mistake in this work can have far-reaching consequences.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Working with Machines, Processes, Techniques in that these are machine-related activities and the work is based on well-organized procedures.

STOCKKEEPING. Work, training, and leisure pursuits concerned with receiving, storing, shipping and issuing supplies, materials, and equipment in a stockroom or warehouse environment, and including taking inventories, keeping records, and requisitioning stock. The outstanding characteristic of these activities is that they include record keeping in conjunction with the physical handling or close contact with material.

Explore D.O.T. OGA's: 223 Stock Clerks and Related Occupations; 229 Material and Production Recording, n.e.c.

Related Career Possibilities: 221 Production Clerks; 223 Shipping and Receiving Clerks; 224 Weighers

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: In school, courses in Bookkeeping, Business Arithmetic, Distributive Education, Filing, Office Machine Operating, Penmanship, Spelling, and Typing are helpful. On-the-job training is the more usual preparation for specific jobs in the field and pertinent specific vocational courses include: Classification of Stock Items; Count, Cycle, Perpetual or other type Inventory; Materials Handling Methods; Preservation and Care of Supplies in Storage Layout and Utilization; Rapid Calculation; Requisitioning; Stock Accounting; Stock Nomenclature and Identification; Stenciling Operations; Storage and Storekeeping; Use of Scales; Use of Stock Catalogs; Warehousing; Waterproofing.

RELATED LEISURE PURSUITS: Taking inventories and keeping stock and equipment records for social, athletic and similar groups. Being property manager for club, church, or civic group. Taking charge of club or school supply room. Summer or part-time work as warehouse helper, wrapper, or stock room helper.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The work requires people who are adaptable to both paper work and the physical handling of items. Stamina and willingness to stand on feet much of the time and do moderately heavy work in lifting objects. A sense of orderliness and system to keep track of a large number of items and details. A sense of responsibility for the value of items handled. An understanding of the material in its operational uses sufficient to check it against specifications. Knowledge of special techniques required in handling of delicate and fragile types of merchandise. When stocks are closely inspected, must have the ability to perceive small differences in form and detail and in some situations no less than normal color vision. Accuracy in counting, selecting, and placing items. Ability to synchronize flow of paper work with a large number of stock locations. Speed in recognizing symbols, terms, designations, and expressions relating to items. Facility in recognizing duplications and discrepancies in items. Legible handwriting.

ILLUSTRATIVE TEMPERAMENT ROLES: Concentration upon routine and repetitive tasks, especially in beginning jobs. Rigorous in accurate observation and recording of both documentary and physical item details. Under Specific Instructions for beginning jobs when work is carefully laid out by another worker.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Routine, Concrete Organized in maintaining attention to many details and standardized rules and procedures. Things and Objects in the physical checking of items.

SCHEDULING WORK. Work, training, and leisure pursuits which are mainly concerned with the routing and scheduling of common carriers: including such activities as calculating arrival and departure times over given routes; coordinating times with plans of traffic flow and with other carriers, assigning personnel to schedules, and making reservations.

Explore DOT OGA: 91 Packaging and Materials Handling Occupations

Related Career Possibilities: Others in 2 (Clerical); 168 Inspectors and Investigators, Managerial and Public Service; 184 Transportation, Communication, and Utilities Industry Managers and Officials; 193 Radio Operators; 90 Motor Freight Occupations; 92 Packaging and Materials Handling Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: High school or its equivalent is usually required. People in these jobs tend to be promoted from related jobs after learning the business thoroughly. The training for this type of work is acquired on the job. Valuable courses are Business Administration, Business Arithmetic, Business Law, Economic Geography, English, Geography, Penmanship, Public Speaking, Traffic Management.

RELATED LEISURE PURSUITS: Interest in travel and transportation problems. Interest in geography and maps, knowing many kinds of maps inside out. Liking to plan itineraries. Studying travel guides, tour brochures.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): An intensive knowledge of the routes covered and regulations for a particular carrier, structure and application of time tables, connection with other transportation systems, and methods of preparing itineraries. Ability to visualize locations of things and places in relation to each other. Good sense of locating and timing. Good organizing and coordinating ability. Memory for details. Pleasant speaking voice. Good hearing. Alertness in manner and countenance. Poise, good manners, and tact. Must be able to understand and read complex transportation symbols and language.

ILLUSTRATIVE TEMPERAMENT ROLES: Dominant to continually coordinate times with plans of traffic flow and with other carriers, assign personnel, etc. Versatile to keep track of a myriad of constantly shifting details and emergencies. Gregarious to meet and deal with people effectively. Self-controlled to make prompt and accurate decisions under pressure resulting from such situations as traffic tieups, accidents, emergency weather conditions, locating replacement personnel for those unexpectedly ill, breakdown of equipment, unforeseen major shifts in traffic load, holiday peak loads, etc. Objective in being sure of facts in coordinating times and plans of traffic flow. Rigorous in that accuracy as unerring as is humanly possible is required; otherwise, snarled traffic flow will result, connections of carriers be missed, and other kinds of tieups which might be disasterous or at least result in complaints to, or loss of business, for company.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in that jobs require a well-kept personal appearance, a courteous manner, and pleasant speaking voice. Prestige as these are usually the top jobs in a hierarchy and regarded in the same light as managerial levels of work.

CODING AND DECODING. Work, training, and leisure pursuits concerned mainly with communicating by code or symbol language of some kind which uses other than the standard alphabet.

Explore DOT OGA's: 199 Misc. Professional, Technical, and Managerial Occupations, n.e.c.;
236 Telegraph Operators

Related Career Possibilities: All Others in 2 (Clerical)

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Braille, Cryptography, Editing, English Courses, Foreign Language Courses, Mathematical Courses, Telegraphy, Telephony, Typing.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Facility in the application of work principles and practices involving knowledge of transmitting symbols, message classifications, the phonetic alphabet, Braille characters, or cryptographic systems and their variations, at times in conjunction with a foreign language. High degree of phonetic association. Imagination in inferring missing constructions from context. Foreign language facility for some jobs. Sense of congruity or incongruity in words and sentences. Reasoning by analogy. Good memory for many items and high capacity for quick and accurate recall.

RELATED LEISURE PURSUITS: Working crossword puzzles. Working on puzzles involving the deciphering and enciphering of codes. Use of Morse code. Radio transmitting and receiving (radio "ham").

ILLUSTRATIVE TEMPERAMENT ROLES: Objective in the use of code symbols and code keys to encipher, decipher, encode, and decode messages written in clear text or in a cryptographic language. Rigorous as in checking proof copy of Braille transcriptions with original script by sliding fingers over raised Braille characters and noting discrepancies, and making proofs for the correction of grammatical, typographical, or compositional errors.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Routine, Concrete Organized as in receiving international Morse or other standardized, electrically actuated code by listening to sound symbols and transcribing code into clear text. People and Communication of Ideas in the ability to use symbol devices to communicate or systematize information or data.

UNDERWRITING. Work, training, and leisure pursuits which involve the selection and classification of insurance risks and the calculation of insurance premiums.

Related DOT OGA's: 169 Occupations in Administrative Specializations, n.e.c.

Related Career Possibilities: All Others in 169 and in 2 (Clerical)

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: The underwriter is an occupation unique to the insurance industry. The industry states in recruitment literature that there are no college or high school courses designed specifically for the would-be underwriter. A very thorough general education is considered indispensable. Although giving the college graduate an advantage, high school graduates with aptitude and interest are said by insurance companies to have a good chance for success in the field. Because of the technical nature of the work, the underwriter has to be trained on the job. Progress on the job is from clerk to junior to senior underwriter.

Courses: Algebra, Banking and Finance, Biology, Calculating Machine Operating, Chemistry, Compound Interest, Economics, English, General Science, Insurance, Insurance Law, Investments, Life Insurance, Mathematics, Occupations, Statistics, Underwriting.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Analytical ability to weigh all data judiciously and come to sound decisions in deciding what constitutes good insurance risks. Good reading comprehension in order to read a medical report and understand it. Understanding of occupations and hazards they entail. Good background in English. Work principles and practices involving a good general knowledge of the nature of insurance, understanding of mathematical procedures and tables; and prescribed standards of insurability on the basis of health, character, occupation, financial situation, and general background. Intelligence, numerical aptitude, verbal aptitude, and clerical perception in some combination are useful aptitudes.

RELATED LEISURE PURSUITS: Pastimes which have indicated a liking for working with figures: Working out puzzles in mathematics, serving as treasurer, etc., combined with activities which have involved classifying, compiling, or collecting. Compiling "vital statistics" for a year book. Compiling bibliographies or any activity requiring research. Interest in life or social or medical sciences as demonstrated by reading, science club activities in school, lectures attended, or the like. Range of several interests, indicating versatility of mind and ease in turning from one type of thinking to another.

ILLUSTRATIVE TEMPERAMENT ROLES: Adaptable to repetitive work for activities such as sorting and dispatching mail, which is a set task performed continuously for long periods. Adaptable to specific instructions, particularly for mail handling occupations. The work is supervised in several ways, including day-to-day supervision from immediate supervisor and on the basis of postal inspections. The latter is done from catwalks built into post offices, from which the inspector observes the worker as the inspector works behind one-way glass. The worker never knows when he is under surveillance and scrutiny. Gregarious to work smoothly in a team situation and maintain a pleasant helpful manner when dealing with the public. Objective in respect for regulations and in seeing that they are carried out and in avoiding rules violations. Rigorous in maintaining sustained attention to work frequently for long periods. One mistake can result in a missent letter or delayed dispatch of a package. All financial transactions (selling stamps, collecting fees, etc.) are expected to balance to the penny.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Routine, Concrete Organized, especially for those in postal work, in that the daily activities and duties of the worker are minutely set forth in writing. The precise time schedule for picking up and deliverying mail is set forth. The instruction indicates the streets on the carrier's route and the order in which they are to be walked, how these streets are to be broken down in bundling the mail, which bundles are to be put in which relay boxes, and so forth. Business Contact as in manning a registered-mail window at a post office or deliverying messages in a business organization.

INFORMATION AND MESSAGE DISTRIBUTION. Work, training, and leisure pursuits concerned with receiving, dispatching, and deliverying mail, messages, and related.

Explore DOT OGA's: 230 Messengers, Errand Boys, and Office Boys and Girls; 231 Mail Clerks; 232 Post Office Clerks; 233 Mail Carriers; 239 Information and Message Distribution Occupations, n.e.c.

Related Career Possibilities: All Others in 2 (Clerical)

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Message distribution occupations are frequently performed on a part-time basis by persons still in school. Jobs in the mail service are under civil service and must be qualified for on the basis of open, competitive examinations which test for reasoning, arithmetic, and verbal ability.

Courses: Alphabetical, Decimal, Chronological, Geographical, or Subject Matter Filing Systems; Business Arithmetic, English, Postal Regulations and Procedures.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): These jobs usually require clerical aptitude combined with the personal qualities needed to be effective in dealing with the public. Jobs in the postal service are very specifically defined and restricted by the regulations of the Postal Manual and by directives and orders issued by the Postmaster General. Workers in that service usually begin on a part-time basis as "substitutes" and advance through a succession of "grades," possibly to supervisory levels.

Post-office work is attractive to many workers because of the visibility of the recruitment process (civil service examinations) and the security which it offers. Lack of job satisfaction may come about because of the extreme structuring of the jobs, the lack of opportunity for initiative, the multiple supervision, and the strong sanctions imposed for even minor infractions of the many rules.

Persons in these jobs need good memory for names, numbers, locations of towns, streets, and similar data, and ability to sort according to alphabet, location, person, or type of handling.

RELATED LEISURE PURSUITS: Any filing, classifying, or collecting activities for school or club or as a personal hobby. Classifying and making catalog cards for school or club library. Making scrap books. Compiling "vital statistics" for a yearbook. Collecting autographs, stamps, or coins. Filing newspaper clippings. Club membership or other pursuit involving meeting and associating with people, particularly those concerned with obtaining or giving information. Serving on Membership, Reception, or other committee devoted to greeting, assisting, or similarly contacting people.

ILLUSTRATIVE TEMPERAMENT ROLES: Versatile to deal with a wide variety of subject matter which includes medical reports, economic reports, occupational information, and mathematical procedures and tables. Objective in the weighing of all information to arrive at consistent judgments on the basis of facts that can be backed up, e.g., when calculates sums due policyholders as a result of death or lapse of policy, verifies results against mathematical procedures and tables. Valuative in that final judgments which underwriter makes involve many variables. No two cases are ever actually alike and he must be the type of person who can make decisions on the basis of his own informed judgment when necessary.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in formulating special agreements between policyholder and company. People and Communication of Ideas in examining applicant data to evaluate risk, deciding on sufficiency of data and calling for more, if necessary. Scientific as stated by an insurance executive: "An analytical mind is an asset for the underwriter. He has to be a logical thinker and one who can sort details and make decisions. The boy or girl who has been a good science or math student will catch on quickly."

DUPLICATING MACHINE OPERATING. Work, training, and leisure pursuits which are concerned with making copies of data by means of machines. Machines frequently used are Dual-Lith, Multilith, Masterlith, Mimeograph, Dupligraph, Multigraph, Compotype, Graphotype, and Xerox.

Explore DOT OGA: 207 Duplicating Machine Operators

Related Career Possibilities: 208 Misc. Office Machine Operators

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: High school commercial courses such as business arithmetic, typing, office machines, and bookkeeping are helpful. Most jobs of this type are usually learned through on-the-job training ranging from a few days to a few months.

RELATED LEISURE PURSUITS: Work around school print shop. Volunteer operating photocopy machines. Liking for work around machines.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): These workers deal with clerical materials, but they are concerned with factors such as evenness of printing, and other appearance factors rather than grammar, spelling, and punctuation. Many of the jobs are of the "soiled-hand" type and the worker must frequently clean ink from hands by means of solvents. The worker is surrounded by machines and the environment is nearer to that of a factory than office. Many of the jobs require that the worker be able to make minor mechanical repairs.

ILLUSTRATIVE TEMPERAMENT ROLES: Adaptability to repetitive work is important. The jobs tend to be routine and unvarying in the tasks performed.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Routine, Concrete Organized in that the work situation is standardized. Working with Machines, Processes, Techniques in working with mechanical equipment and in attentiveness to detail in continuous inspection of the duplicating processes.

BASIC VOCATIONAL DIRECTION

PUBLIC CONTACT

General Public Contact Work
Customer Service Work
Automobile Serving Activities
Miscellaneous Public Contact Work
Selling

PUBLIC CONTACT (GENERAL FIELD DESCRIPTION)

PUBLIC CONTACT work includes (1) occupations in which the worker performs clerical or related functions involving direct contact with the public, (2) selling, (3) customer services not involving sales, and (4) a miscellany of nonsales activities in which dealings with other persons are casual, involving only routine questions and answers, but frequently imposing a very specific personality or physical requirement as, tall, short, chic appearance, grey-haired, ability to extemporize, etc.

Many PUBLIC CONTACT occupations require considerable knowledge of sales or other social techniques, and background information about products or services. However, when knowledge of technical matters such as contracts, credit, market conditions, or methods of organizing sales or advertising campaigns is more critical than public contact as such, the occupations are considered to require organized knowledge.

Occupations in which the worker deals with people in situations requiring a professional understanding of the individual or of society, such as lawyer, psychologist, psychiatrist, social worker, or clergyman, are considered to be Public Service or Technical Work.

General Public Contact Work differs from clerical work chiefly in the degree of public contact involved. In the CLERICAL group public contact is clearly secondary to the clerical functions whereas the reverse is true in General Public Contact Work. Many applicants will find either of these almost equally suitable.

No sharp distinction can be drawn between certain types of PUBLIC CONTACT work such as Customer Service, and certain types of SERVICE work, particularly in Personal Service, in which the worker contacts the public. As a rule, when a person appears to have the qualities needed for one of these fields, occupations in the other should be explored.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Business Arithmetic, Business Psychology, Distributive Education, English courses, Etiquette, Interviewing Techniques, Oral English, Personality Development, Public Relations, Public Speaking, Reception, Salesmanship courses of all kinds. Switchboard Operating, Telephone Usage, Typing.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): As Public Contact Work is chiefly involved with communication on a face-to-face basis, qualification for the work depends primarily upon the ability to relate effectively to other people, but clerical ability is also needed for jobs involving clerical tasks. The more demanding public contact jobs require the social insight to evaluate human personalities and guage their reactions. In many types of selling, there is required a capacity for energetic promotion, skill in persuasion, determination to convince, and attitude of equaniminity in the face of resistance, indifference, or affront. Good memory for names, faces, and details and good hearing. Sense of appropriate grooming. Poise, good manner, and tact. Personable in total personality effect. Pleasing speaking voice with good modulation and clear enunciation. Specialized training is not emphasized in this work and the generalist often finds opportunity. Verbal is the most frequently used aptitude. Numerical aptitude, clerical perception, and form perception are used less frequently.

RELATED LEISURE PURSUITS: Pursuits that indicate preferences centered around events and personalities. Club membership, sports activity, or other pursuit involving meeting and associating with people. Serving on membership, reception, or other committee devoted to greeting, assisting, or similarly contacting people. Ushering and giving information to people at bazaars, fairs, and auctions.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious as it may show up in qualities such as tact, patience, ease of manner, courtesy, and a liking to be in the presence of other people and as demonstrated in the insight to recognize and get along with different types of people. An important variable is the temperament Influencing which is critical only in Selling. Jobs in nonselling public contact work do not require the same energetic promotion, skill in suggestion, and determination to convince which is to a more or less degree characteristic of the successful sales personality.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Those who like a business environment and a ready smile as a part of the day's work have the Business Contact interest which most of the jobs require. People whose work preferences center around events and personalities, i.e., People and Communication of Ideas, also possess a frequent interest requirement of jobs in PUBLIC CONTACT.

GENERAL PUBLIC CONTACT WORK. Work, training, and leisure pursuits in dealing with the public for the purpose of supplying or obtaining information, adjusting complaints, making collections, settling claims, obtaining credit or personnel information, or similar nonsales activities.

Explore D.O.T. OGA's: 235 Telephone Operators; 237 Receptionists and Information Clerks; 240 Collectors; 241 Adjusters; 242 Hotel Clerks, n.e.c.; 243 Direct Service Clerks

Related Career Possibilities: 211 Cashiers; 212 Tellers; 230 Messengers, Errand Boys, and Office Boys and Girls; 232 Post Office Clerks; 233 Mail Carriers; 239 Information and Message Distribution Occupations, n.e.c.; 249 Misc. Clerical Occupations, n.e.c.; 34 Amusement and Recreation Service Occupations; 388 Elevator Operators

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Business Arithmetic, Business Law, Business Psychology, Clerical Procedure, Contract Law and Regulations, Credits and Collections, English, Etiquette, Interviewing Techniques, Oral English, PBX Training, Personality Development, Protocol, Public Relations, Public Speaking, Switchboard Operating, Reception, Telephone Usage, Typing.

RELATED LEISURE PURSUITS: Club membership or other pursuit involving meeting and associating with people, particularly those concerned with obtaining or giving information or adjusting differences of opinion. Serving on Membership, Reception, or other committee devoted to greeting, assisting, or similarly contacting people. Ushering and giving information to persons at bazaars, fairs, auctions, and similar events. Serving as marshal or usher at school or church function. Assisting in election campaigns. Volunteer collecting as in charity drives or similar activities. Participating in round-table discussions.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Ability to meet and converse easily with different kinds of people. Sensitivity to the attitudes and reactions of others. Capacity for attentive listening. Personable total personality effect: clear speech enunciation and agreeable modulation, good manners, poise, tact, cheerfulness, and sense of appropriate grooming. Memory for names and faces. Adequate oral vocabulary.

ILLUSTRATIVE TEMPERAMENT ROLES: These activities are people-centered; hence the ability to relate effectively to people is crucial for job success. A valuative approach is involved in that the criteria for judgments are often observations of people - their facial expressions, tone of voice, gestures and postures, as well as spoken communications.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact as in receiving, meeting, and dealing with people in formal, business situations, either vis-a-vis or by telephone, or both. Routine, Concrete Organized in that the work is basically concerned with obtaining and dispensing standardized types of information and maintaining records of procedural detail. People and Communication of Ideas as in establishing effective techniques of approach and interchange of information. This may occur in such situations as the diplomatic handling of complaints; the tough persistence required to collect delinquent accounts; or in essentially public relations functions functions such as greeting and introducing guests at clubs and studios or telephoning newcomers in a city to offer information on travel facilities.

CUSTOMER SERVICE WORK. Work, training, and leisure pursuits requiring a ready response to a customer's request for service or information.

Explore D.O.T. OGA's: 290 Sales Clerks; 242 Hotel Clerks, n.e.c.; 243 Direct Service Clerks, n.e.c.

Related Career Possibilities: 299 Merchandising Occupations, except Salesmen, n.e.c.; 249 Misc. Clerical Occupations, n.e.c.; 292 Routemen; 915 Attendants and Servicemen, Parking Lots and Service Facilities; 237 Receptionists and Information Clerks; 31 Food and Beverage Preparation and Service Occupations; 32 Lodging and Related Service Occupations; 34 Amusement and Recreation Service Occupations; 352 Hostesses and Stewards, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Arithmetic, Cash Register Operating, Clerical Procedures, Grooming, Oral English, Selling Procedures, Telephone Usage.

RELATED LEISURE PURSUITS: Ushering and giving information to persons in church, at bazaars, fairs, auctions, concerts or other entertainments and events. Any activity involving handling money and making change, such as selling tickets, Christmas cards, Girl Scout candies, newspapers, and the like. Arranging displays of merchandise for church or school exhibits. Guiding people through exhibits. Having a Saturday or holiday job in a store, library, or theater. Soda dispensing. Part-time gas station work.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Neat, attractive appearance. Cheerful, cooperative, obliging manner. Alertness and speed in responding to requests made by others. Well-pitched voice and ability to speak English distinctly. Add and subtract accurately and rapidly. Frequently ability to stand on feet all day. Frequently good color vision.

ILLUSTRATIVE TEMPERAMENT ROLES: Dealing with People (Versatility) in that cues for action are chiefly communications from others or observations of others. Adaptability to Routine as in quickly accepting cash payment, making change, and wrapping articles selected by customer OR in playing phonograph records according to customer's selections in a restaurant.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in that the dealing with people is in formal, business situations. Routine, Concrete Organized in the keeping of systematized, detailed records such as tallies, desk diaries, sales slips, etc.

AUTOMOBILE SERVING ACTIVITIES. Work, training, and leisure pursuits concerned with serving drivers of motor vehicles, by polishing, lubricating, refueling, and making minor repairs to their cars or trucks.

Explore DOT OGA: 915 Attendants and Servicemen, Parking Lots and Service Facilities

Related Career Possibilities:
185 Wholesale and Retail Trade Managers and Officials;
620 Motorized Vehicle and Engineering Equipment Mechanics and Repairmen;
90 Motor Freight Occupations;
280 Salesmen and Salespersons, Transportation Equipment;
292 Routemen

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: In high school, courses such as business arithmetic, bookkeeping, salesmanship, automotive mechanics, electricity, metal shop courses, and distributive education. High school graduation is preferred but less is sometimes accepted. On-the-job training is usual, but most major oil companied conduct formal training programs for service station attendants. They may recruit for their higher level jobs in this way; in such circumstances college or technical training in engineering, technology, business administration, or liberal arts is valuable. The jobs are often transiently held by college students or by those who look upon them only as training ground for managerial, self-employed, or mechanic positions.

RELATED LEISURE PURSUITS: Any school or sports activities involving meeting the public in a pleasant manner, handling money and making change, writing out receipts and the like. Experience with, and interest in cars: Own, family's, or friends. Washing and greasing car. Tinkering with motor. Repairing bent fenders, adjusting ignition, soldering leaking radiators, replacing spark plugs, tightening screws and bolts. Summer or part-time job at drive-ins, stadiums, amphitheaters, etc., cleaning windshields and performing other automotive services for patrons.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Some of the jobs in this field involve constant dealing with the public, thus requiring an agreeable manner, and a personality which adjusts well to public contact. Other jobs involve much less contact with people and more work with the car itself and its accessories. However, there is much moving back and forth between such jobs. A typical job involves the worker in a "meet the public" orientation, and requires him to be more or less a combination cashier, salesperson, and minor mechanic. These workers are required to have a driver's license. They must be able to make change or fill out credit card charge slips rapidly and accurately. Although involved in much dirty, greasy work, they still need to give an appearance of neatness.

ILLUSTRATIVE TEMPERAMENT ROLES: Dealing with People to work smoothly with all kinds of personalities which frequent a service station, including the occasional "difficult" customer.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in that politeness and a ready smile are all part of the day's work. Things and Objects in the considerable attention which they must give to the checking of cars for needed services, in using hand tools and power equipment such as wheel alignment machines, and in pumping gasoline.

MISCELLANEOUS PUBLIC CONTACT WORK. Work, training, and leisure pursuits of a public contact nature in which the qualification for the work relates chiefly to personal traits of the worker, whether it is interviewing people in superficial and transient situations or functioning in some capacity depending upon appearance, speech, ability to extemporize, impersonate, sing, etc. Many jobs which require the ability to function as a "personality" but not trained acting skills are related to this field of work.

Explore DOT OGA's: 297 Demonstrators (Promotion characters, cigarette girls, song pluggers, sample distributors, and the like)

Related Career Possibilities:
24 Miscellaneous Clerical Occupations
25, 26, 27, 28 Selling
29 Merchandising Occupations, Except Salesmen
31 Food and Beverage Preparation and Service Occupations
34 Amusement and Recreation Service Occupations
35 Miscellaneous Personal Service Occupations
36 Apparel and Furnishings Service Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Census Taking, Charm, Demonstrating, Dramatics, Interviewing Techniques, Modeling, Personality Development, Posture, Public Speaking.

RELATED LEISURE PURSUITS: Participating in beauty contests. Roles in high school or club plays. Being a drum majorette. Modeling. Census taking. Survey working. Odd jobs as Santa Claus, parade character, demonstrator in store window or on local TV commercials.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Particular personality traits required by job.

ILLUSTRATIVE TEMPERAMENT ROLES: Dealing with People in activities such as brief conversational exchanges with people, posing for them, or attracting their attention in some way. Subjectivity in situations such as impersonating storybook characters (Snow White, Mickey Mouse, and the like) in a toy shop.

ILLUSTRATIVE INTEREST INVOLVEMENTS: People and Communication of Ideas as in using various devices to attract attention of passersby to solicit gifts or alms for some cause or charitable organization; OR parading in special costumes to advertise a commodity or service. Business Contact in handling in a businesslike manner situations such as gathering census information or photographing passersby on the street.

SELLING. Work, training, and leisure pursuits which involve dealing with people, either in an establishment or outside, in person or by telephone, to influence them in favor of a product or service.

Explore D.O.T. OGA's: 25 Salesmen, Services; 26, 27, 28 Salesmen and Salespersons, Commodities

Related Career Possibilities: 29 Misc. Occupations, except Salesmen; 00 and 01 Sales Engineers

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: In high school: Public Speaking, Debating, English, Commercial Arithmetic, Salesmanship, Psychology, and Business Law.

Other: Advertising, Appraising and Evaluation, Applied Psychology, Business Arithmetic, Business English, Business Law, Brokerage and Commissions, Economics, English, Finance, Geography, Insurance, Liberal Arts, Marketing, Merchandise, Psychology, Psychology of Personality, Public Speaking, Salesmanship, Sales Psychology, Sociology, Retailing, Shop Card and Sign Writing, Window Display, Wholesaling.

Selling as a field has few, if any, entry requirements. Almost any individual can enter the sales field. Selling often becomes a "second career" for retired people. Although organized selling, such as found in the insurance field, has done much to "professionalize" the occupation, the occupation is generally unlike law, medicine, etc., in that it admits recruits immediately into its ranks to either "make a go of it" or fail, whereas recruits into the professions per se, are screened and trained.

People who go into selling that requires extensive technical knowledge usually need a college or technical school education. A business administration major provides a good background for selling. College liberal arts majors without specialized professional training and persons having incomplete college frequently find good opportunities. The field is also one of those most likely to offer employment opportunity to people with less than complete high school. A broad, diversified education (not necessarily acquired in school) is considered a desirable asset in the selling field. There is extensive selection of personnel in selling occupations on the basis of psychological tests.

RELATED LEISURE PURSUITS: Soliciting donations, conducting advertising for school or club. Participating in or organizing games, sports events, or parties. Getting elected to posts such as head of student body, president of club, etc. Recruiting club members. Having paper route and soliciting new subscribers. Demonstrating articles for sale and house-to-house selling of magazines or Christmas cards. Debating. Calling people on the telephone. Collecting contributions for charity fund drive. Being host or hostess at social club affair. Arranging displays for club or school exhibits.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Robert A. Whitney, President of National Sales Executives, Inc., calls selling the "art of creating a nation-wide, even a world-wide, desire." And Mr. Whitney sees the activity of selling as the key factor in modern economy. In contrast, there is a popular notion that the salesman is a "wheeler and dealer." A sociologist writes of the solicitor or peddler and his devices to make his work tolerable and his tensions resulting from a fear that his work is seen by others as ludicrous and low-status. Salaries in the field of selling range from fabulous six-figure incomes to the meager earnings of some who barely achieve a survival standard of living.

Selling as a field of work (excluding customer serving jobs such as sales clerk) falls into two distinctly different categories that make different demands upon the seller's personality adjustment. Salespeople usually work inside an establishment, frequently behind a counter. The customer approaches them and they help him make selections by offering suggestions as to quality, style, use, or price. Salespersons must be tactful in overcoming sales resistance and have aptitude for explaining and demonstrating the attractive features of an article or service. However, the emotional demands upon them to control situations and manipulate people are not great and the capability to function successfully as a salesperson is a very widespread ability among people. One of its main stresses is that much standing may be involved.

Both the adjustments and the skills required of salesmen, by and large, are more exacting. The successful, prosperous salesman has usually become so because of a true "talent" for selling, that is, a personality with a high degree of ability to influence people. The salesman calls at offices, homes, or other establishments. He plans his selling activities, develops leads and acquires regular customers, often having charge of a large territory which keeps him "on the road" most of the time.

The salesman must be resourceful and persevering in finding prospective customers and use sound business judgment in analyzing their needs and problems. He may have no set schedule and be master of his working hours, but on the other hand, the sales opportunities may be so elusive, and the feeling of uncertainty about the outcome of a transaction so strong, that he is reluctant to take a vacation, for fear he will lose commissions. Or he may be subjected to much stress because of keen competition and the pressure to meet quotas.

The salesman must be a very keen student of human nature, with the acuity in assessing human personalities necessary for him to guage their reactions and decide upon the selling method likely to be most effective with them. Some types of selling, such as insurance, put the salesman into a combined service and sales role. Some salesmen, such as in real estate, are required to be licensed.

Leslie J. Silverman, in "The Social Role of the Salesman," says that "Although almost any individual can enter the sales field, the experienced salesman has a set of skills, a body of knowledge, and repertoire of behavior which differentiates him from the entry sales worker. His repertoire of behavior is somewhat similar to that of the counselor in that the chief technique of each is the use of the self as a psycho-social instrument." However, the salesman is not bound, as the counselor, by any consideration of the client. Nevertheless, as Robert A. Whitney projects the image of salesmanship he places integrity at the top of his list of requirements for sales success.

ILLUSTRATIVE TEMPERAMENT ROLES: Influencing People to deal persuasively with people in direct contact situations. Gregarious to enjoy meeting and talking with people and making acquaintances. Valuative in that perceptiveness of others' personalities must usually serve as the criterion. The seller trusts his own estimates and acts on shrewd guesses and "hunches." He "sizes up" people and situations intuitively. Self-Control to perform under stress, as the department store salesperson keeping irritation or impatience from manner when a customer wishes to buy at closing time OR the house-to-house salesman, insurance agent, or traveling salesman maintaining equanimity in the face of resistance, indifference, or affront.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in that the interest in others is from a business point of view, i.e., in terms of people's material needs and the serving of these needs in a way to achieve gain for self or organization (in contrast to Social Welfare interest in which the person and his welfare is the object and end of interest). People and Communication of Ideas in that successful selling depends on seller's ability to explain advantages of a particular product, commodity, or service.

BASIC VOCATIONAL DIRECTION

SERVICE

Food Preparation and Serving
Cooking
Barbering
Cosmetology
Health Care Services
Child Care
Hospitality and Escorting Services
Lodging Services, n.e.c.
Customer Services, n.e.c.
Personal Serving, n.e.c.
Building Services, n.e.c.

SERVICE (GENERAL FIELD DESCRIPTION)

Pursuits in SERVICE, as they are considered here, involve (1) preparing, handling, or cooking food in homes or public eating places; (2) the care, amusement and proper development of children; and (3) a miscellany of other personal services.

Many SERVICE occupations have duties and requirements similar to those of workers in certain other groups. Some occupations that are generally considered to be in the category of SERVICE, nevertheless have much in common with those considered to be PUBLIC CONTACT, which require a worker to respond rapidly, efficiently, and graciously to requests for service or information. For example, the Curb Boy and the Sales Clerk, both receive cash from customers for services rendered. However, the Curb Boy normally makes himself useful by carrying packages, etc., while the Sales Clerk typically limits her service to exchanges of goods and money.

Also, as might be expected, there are significant relations between SERVICE and PUBLIC SERVICE occupations. For example, the Kindergartner (Child Care), organizes games, teaches simple arts and otherwise serves the interests and needs of little children in playrooms, while the Kindergarten Teacher (Public Service), working at a professional level, develops their aptitudes through the same or similar activities.

Certain Adult Care occupations are related to various occupations which are in the professional medical field. For example, both the Beauty Doctor (Adult Care), and the Dermatologist (Nursing and Medical), diagnose and prescribe for skin ailments, the former for cosmetic, and the latter for medical purposes. Again, the Electrotherapist (Medical and Nursing), and the Electrologist (Adult Care) operating at comparable levels, require somewhat similar trait patterns. The Embalmer (Adult Care), has duties that may be part of the function of the Funeral Director (Mortician), a managerial occupation in the ORGANIZED KNOWLEDGE group.

Jobs which require licensing, such as barbers, beauticians, and embalmers, are usually entered by apprenticeship or related training. Specialized training is also required for airplane hostesses, cooks, nurse aides, electrologists, and the like.

Bus boys, soda dispensers, and elevator operators need only short on-the-job demonstration. Companion, escort, matron, and similar hardly involve vocational preparation at all, but frequently need a relatively high level of general educational development and social intelligence to meet the cultural and other demands of their work.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Home economics and related courses, shop courses, commercial courses, driver education, public speaking, English, arithmetic, science, food preparation and serving.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The SERVICE worker may be required to subordinate himself to an employer or customer and maintain subservient attitude. In occupations such as the exclusive hair stylist, the head waiter, the chef, the make-up artist, or the high-rise apartment manager, hauteur may be more descriptive of the personality style. Nevertheless, it is usually the case that the SERVICE worker devotes his time to waiting on others and he is often economically dependent upon their tips. This tends to emphasize his subordinate position and unequal social status. For some persons, a SERVICE role is stressful on this account. The SERVICE worker may render highly esteemed services to others and derive self-fulfillment from the feeling of being valued and needed. Verbal ability is used in many of the jobs. Some involve numerical and form perception. Motor coordination, manual and finger dexterity are used in many jobs.

RELATED LEISURE PURSUITS: Activities demonstrating dependability in caring for children: "baby-sitting", volunteer child care. Self-developed skill in cooking. House cleaning. Waiter or waitress at school, club, or church luncheons, dinners. Volunteer nursing. Red Cross home nursing and first-aid courses. Interest in doing personal tasks for others such as curling hair, fixing their nails, or giving them home permanents. Running errands, carrying groceries, deliverying messages, shoe shining. Serving as host, hostess, usher, at any function. Spare-time taxi driving. Casual work: amusement park, hat or coat checker, porter, yard worker, window washer.

ILLUSTRATIVE TEMPERAMENT ROLES: For the majority of the jobs in the SERVICE group (the field of COOKING being an exception) first and foremost is the requirement that workers adapt to Dealing with People, that they be Gregarious enough to adjust to being with people all or most of the time and devoting their attention to them.

In many of the jobs the SERVICE worker is required to be in close physical contact with those whom he serves and to cater to their personal needs and wishes. This puts a premium on a temperamental tendency towards Submissiveness or Adaptability to Working Under Specific Instructions.

ILLUSTRATIVE INTEREST INVOLVEMENTS: The Interests associated with the SERVICE group are also mainly people-directed with however, a different emphasis for various types of jobs. In jobs involving formal business contacts, such as food serving occupations, various types of attendants, and beauticians, where the main requirement is politeness and a manner to encourage future patronage, a Business Contact interest is preferable. On the other hand, occupations such as NURSE AIDE, PRACTICAL NURSE, MATRON, AND FUNERAL ATTENDANT are more concerned with aiding people who are disturbed, suffering, or incapacitated in some way and require Social Welfare oriented interests. For people who act as COMPANIONS and read to, converse and play games with their employers or as ESCORTS who act as social partners, the ideal interest is People and the Communication of Ideas.

Again COOKING is somewhat different. The main interest is Tangible, Productive Satisfaction in working towards a goal of a finished product and taking pride in it, whether it is an individual dish or a full-course dinner.

FOOD PREPARATION AND SERVING. Work, training, and leisure pursuits which involve the serving of food and drinks and related activities.

Explore D.O.T. OGA's: 310 Hostesses and Stewards, Food and Beverage Service, Except Ship Stewards
311 Waiters, Waitresses, and Related Food Serving Occupations
312 Bartenders

Related Career Possibilities: 305 Cooks, Domestic
313 Chefs and Cooks, Large Hotels and Restaurants
314 Chefs and Cooks, Small Hotels and Restaurants
315 Miscellaneous Cooks, Except Domestic
317 Miscellaneous Food and Beverage Preparation Occupations
318 Kitchen Workers, n.e.c.
319 Food and Beverage Preparation and Service Occupations, n.e.c.
32 Lodging and Related Service Occupations
34 Amusement and Recreation Service Occupations
35 Miscellaneous Personal Service Occupations
29 Miscellaneous Merchandising Work
24 Miscellaneous Clerical Occupations
23 Information and Message Distribution Occupations
22 Material and Production Recording Occupations
077 Dietitians
079 Occupations in Medicine and Health, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

PERTINENT INFORMATION (Special requirements, cultural and sociological data): About a million people work in food serving, as waiters and waitresses, and related food handling occupations. Although they work in a variety of environments, formal and informal, the basic duties are essentially the same. Nevertheless, the "hamburger stand" or roadside "joint" where food is served "without frills" involves really a very different work culture from that of the exclusive restaurant which requires that its waiters speak a foreign language and flame for guests certain dishes as crepes suzettes. Good physical health is important as work may be strenuous. Being able to remember customers' likes, dislikes, and interests is a valuable asset. In this work, the worker must present a neat and clean appearance at all times. He needs the ability to speak well and a knowledge of simple arithmetic.

RELATED COURSES: The type of establishment determines the amount of schooling required. Many jobs require only short demonstration on the job. Formal establishments may require many years experience. Specific courses: French, Home Economics, Serving, Soda Fountain, Table Serving, Tearoom, Waiter and Waitress Training, Waiting-on-tables.

RELATED LEISURE PURSUITS: Serving food or drinks. Hostess or head waiter in a dining room. Waiter or waitress at school, club, or church luncheons, dinners.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious to be able to put people at their ease and to adapt to the personalities of all kinds of people. Self-Control for those jobs which involve a great rush in service at peak periods of the day.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in that persons in this work come into daily contact with the public and must make a good impression upon people, as representatives of their employing establishment. People and Communication of Ideas to suggest dishes to guests, offer suggestions concerning the correct wine for entrees, etc.

COOKING. Work, training, and leisure pursuits which involve preparing, handling, or cooking food. This may take place in private homes, commercial restaurants, hotels, cafeterias, hospitals, government institutions and the armed services, catering establishments, and bakeries.

Explore DOT OGA's: 305 Cooks, Domestic; 313 Chefs and Cooks, large hotels and restaurants; 314 Chefs and Cooks, Small hotels and restaurants; 315 Misc. Cooks, except domestic; 319 Food and Beverage Preparation, n.e.c.; 187 Service Establishments, Managers and Officials

Related Career Possibilities: All occupations in 31 Food and Beverage Preparation and Service

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Short order cooks in small establishments may enter the work with less than a high school education and with limited training. On the other extreme, chefs and caterers in some circumstances could profit by a college degree in home economics. Apprenticeships usually specify high school graduation or equivalent to qualify. Much of the training in this field consists of "learning by doing." Pertinent courses include: Baking, Catering, Chemistry, Cooking, Dietetics, Domestic Science, Food Trades, Home Economics, Hygiene, Meal Planning, Nutrition and Dietetics, Pastry Making, Sanitation.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Although it is possible to become a cook without great interest in it, cooking as a truly satisfying career is possible only to those who look upon food preparation as an art second to none. Familiarity with foods and seasonings. Some knowledge of dietary values. Skill in timing and coordinating the preparation of various dishes and courses. Artfulness in combining foods in a savory manner and arranging them attractively. Judgment in buying food. Good health and freedom from communicable disease. High standards of cleanliness and respect for sanitary regulations. Keen sense of taste and smell. Eye-hand coordination. Finger and manual dexterity. Good near vision and normal color discrimination.

RELATED LEISURE PURSUITS: Activities which show a preference for a home or public eating place, rather than industrial or office environment. Learning to prepare new dishes. Camp cooking. Candy making. Making bread and pastries. Entering cooking contests. Cutting out recipes and trying them out. Planning menus and meals. Planning balanced diets. Keeping a spotless kitchen. Going to trouble to make foods attractive. Selecting meats and vegetables for freshness and quality in a grocery store. Working in school kitchens, restaurant, bakery shop, or meat market.

ILLUSTRATIVE TEMPERAMENT ROLES: The work is greatly involved with <u>valuative</u> approaches, in constantly judging flavors and freshness, ripeness, variety, texture, or stage in cooking or processing of foods by smell, taste, or appearance. Cooks in private homes may need a capacity for <u>submissiveness</u> in following daily instructions of employer and catering to his individual food tastes. <u>Subjectivity, or self-expression</u>, may be an aspect of food preparation jobs in prestige eating places where a premium is placed on the "chef's creations." The cook may be <u>versatile</u> in his capacity to handle food preparation of many types from hamburgers to canapes and hors d'oeuvres.

ILLUSTRATIVE INTEREST INVOLVEMENTS: <u>Tangible, Productive Satisfaction</u> in that a good cook always works toward final results and takes pride in the finished product, whether it is an individual dish or a full-course dinner.

BARBERING. Work, training, and leisure pursuits involving cutting and dressing the hair, and shaving or trimming the beard of male persons.

Explore D.O.T. OGA: 330 Barbers

Related Career Possibilities: 33 Other Occupations in Barbering, Cosmetology, and Related Service Occupations; 07 Occupations in Medicine and Health

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: High school recommended: English, social studies, science, and business training. Barbers are licensed and must have graduated from a State approved barber school.

RELATED LEISURE PURSUITS: Casual work experience as a valet, shoe-shine boy in a barber shop, etc. Any work involving waiting on peopleas in a drug store, restaurant, or service station. First aid course.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The work of the barber may take place in a hotel, an office, a steamship, a hospital, on a small town main street, or a score of other places. He is more apt to be self-employed in the small town setting. The barber stands on his feet for most of the day. He must constantly have his hands in water, shampoo solutions, etc. Long hours of standing and bending are part of a barber's job. Many barbers find their role in contributing to the well-groomed appearance of the public to be a rewarding one. However, persons who become irritated with too much contact with people may find the work unsatisfactory. The barber himself not only must be neat and well-groomed, but he is likely to be accepted in his work to the extent that his personality is pleasing to the public and he is free from physical abnormalities, such as blemishes, scars, or distracting mannerisms.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious to adapt to all kinds of people, and know when to talk to them and when to be silent and listen. Adaptable to Specific Instructions to adjust to pleasing others rather than himself. Valuative to be able to style and cut customer's hair in a manner which is most becoming to him.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in that the barber must be diplomatic, businesslike, and cheerful, even when dealing with hard-to-please customers.

COSMETOLOGY. Work, training, and leisure pursuits which involve the cosmetic treatment of skin, hair, and nails (excludes Barbering).

Explore DOT OGA's: 331 Manicurists; 332 Hairdressers and Cosmetologists; 333 Make-up, Theatrical; 339 Barbering, Cosmetology, and Related Services, n.e.c.; 187 Service Industry Managers and Officials (Beauty Shop Managers)

Related Career Possibilities: 330 Barbers; 334 Masseurs and Related Services; 335 Bath Attendants; 338 Embalmers and Related Occupations; 07 Occupations in Medicine and Health

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: The preferred training includes completion of high school with courses such as chemistry, physiology, biology, business arithmetic, business English, public speaking, office practice, freehand drawing, and cosmetology, plus apprenticeship or other formal training program. All States require that cosmetologists be licensed. The specific requirements for general education may be as low as completion of eighth grade. Length of preparation time varies. Some schools offer six months programs; others continue over a period of one or two years. An approved cosmetology curriculum usually includes the following subjects: sanitation and sterilization; skin, hair, nails, use of electricity; anatomy as it pertains to beauty culture; facial treatments; eyebrow arching; manicuring; shampoos and rinses; scalp treatments; hair coloring; hair bleaching; lash and brow tinting; hair cutting; hair styling; permanent waving; business management.

RELATED LEISURE PURSUITS: Doing personal tasks for others, such as curling hair, fixing their nails, or giving them home permanents, shampoos, facials, etc. Learning to bleach or dye hair. Studying art of make-up. Buying beauty kits of various kinds and trying out on self. Experimenting with own hair style, nail polish, make-up. Interest in perfumes: "collecting" various perfumes; trying out different perfumes with costumes and occasions. Reading magazines and newspaper sections devoted to topics related to personal beautification.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Cosmetology, although a modern craft, had origins as an ancient guild. The present-day cosmetologist may (1) cut hair according to instructions or original style, (2) comb and wave hair, (3) create new coiffures, (4) give permanent waves, (5) tint or dye hair, (6) treat skin by lotions, packs, etc., (7) apply make-up, (8) manicure nails. Some cosmetologists specialize and become more expert in one particular beauty operation. More frequently, operators are "all-around" and are competent to perform the full range of services above.

The larger the shop the greater the degree of specialization among the personnel. Many cosmetologists own and operate their own shops, performing any one or a number of cosmetology specialties and managerial duties as well. Although cosmetology is largely a women's occupation, men are also engaged in it, especially in hair styling. The creation of new and varied coiffures offers scope for artistic ability and commands high returns. The make-up artist in theatrical and TV work is likewise often regarded as an artistic pursuit. The field of cosmetology relates to other work fields which are diverse in work culture. It is distinctly a public contact endeavor and the practitioners must be good public contact people. In terms of the skills involved, it relates to medical work, being a physical service for people, requiring technical training and subject to state licensing and a code of ethics. No profession is more esoteric in its body of techniques and specialized knowledges. Much medical knowledge, for example, is widely published. Very little in the field of cosmetology is available to the layman. However, cosmetology is not a profession per se, being tied to the mores of the SERVICE sphere of work, with the economics of its practitioners heavily dependent upon tips. One rewarding feature of the field is the opportunity which practitioners have of entering competitions in hair styling. The winning of plaques and trophies offered by the professional associations is an honor greatly valued in the work.

The billion-dollar field of cosmetology offers some of the best career possibilities for women. Aspirants require stamina to endure long hours of standing. They need good color vision; eye-hand coordination; touch discrimination; good sense of line, color, and proportion; fashion sense; ability to assume responsibility; discretion not to reveal gossip which they may hear and to keep confidential any information about customers.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious because the constant close personal contact with others and the necessity of listening to them talk about themselves and being attentive to what they say requires more than mere tolerance for people. To be happy in their work COSMETOLOGISTS require a genuine enjoyment of the company of others and interest in helping them to a better appearance. Lack of adaptability to all types of personalities is a severe handicap in the work. Under Specific Instructions to try to please people exactly in very specific ways, such as cutting hair just as they want it, or rearranging a hair style for the "fussy" customer. Subjective in having the artistic sense to make the best of the customer's good points and be able to style hair in terms of customer's own individuality and personality. Valuative in achieving expertness in ability to judge by observation and "feel" of hair texture, the proper solutions and rollers for a particular type of permanent wave. Objective in relying upon appropriate tests as check upon appropriateness of judgments about condition of hair. Rigorous in timing permanent waving, skin treatments, etc., within limits of established safety standards.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact to like and be able to deal with the public. People and Communication of Ideas in that people and personalities are the focus of interest in these jobs. Abstract, Creative in studying the personalities of patron and creating hair style and make-up ensembles which enhance the patron's appearance or personal style. Prestige for "glamour" jobs such as being a cosmetics manufacturer's representative, being a beauty counselor or a beauty editor, a theatrical consultant on hair styling or make-up, or a beautician on an ocean liner.

HEALTH CARE SERVICES. Work, training, and leisure pursuits which are related to serving the health needs of persons and animals.

Explore DOT OGA's: 354 Unlicensed Midwives and Practical Nurses; 355 Attendants, Hospitals, Morgues, and Related Health Services; 356 Occupations in Animal Care, n.e.c.; 359 Miscellaneous Personal Service Occupations, n.e.c.

Related Career Possibilities: 07 Occupations in Medicine and Health; 30 Domestic Service Occupations; 33 Barbering, Cosmetology, and Related Service Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: People who enter these services include high school graduates and those with less than high school: sometimes with less than grammar school. Training requirements vary. For LICENSED PRACTICAL NURSE, training is offered in public schools, vocational and adult education programs, and by hospitals and junior colleges. Such training includes both classroom study and clinical practice. Classroom instruction covers basic nursing skills and related subjects such as body structure and functions, personal hygiene, nutrition, first aid, and community health, supplemented by supervised practice. Training for auxiliary nursing workers such as nurses' aides, orderlies, and hospital attendants usually involves one week to three months. This may be classroom and demonstrations supplemented by specific practice, or it may be "on-the-job" training, consisting of daily instruction by supervisors on the tasks at hand. Animal care occupations are usually learned on the job.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): These various jobs offer good opportunities for persons interested in the health field who cannot meet the educational requirements for professional health occupations. They have provided employment opportunity for the undereducated, the late-in-life labor market returnees or entrants, for people with borderline or low-normal intelligence, and for many people who prior to automation were chiefly employed in factories. For those who are strongly motivated to be of service to others and who greatly desire to feel needed, the jobs may be very rewarding and provide a truly satisfying way of life.

However, some of the jobs involve special problems of adaptation. The duties of such jobs consist of the most menial tasks involved in direct patient care. The workers are required to perform the chores and tasks which may make them feel degraded in the eyes of themselves and the patients. Their tasks are never done, but they are expected to remain willing and cheerful at all times. They are constantly subjected to the demands of patients and direct orders from the professional staff. They have no occupational mobility; hence are cut off from upward aspiration. They must acquire some of the knowledge and attitudes of professionals but in the hierarchial hospital system with its emphasis on differential status, they are not accorded status and may be made sensitive to the fact that they are in a "low prestige" situation.

For jobs of this nature which are not carried out in an institutional setting, the above does not apply. Moreover, the more of an individual institution may differ greatly in the atmosphere which it provides that may be favorable to the feeling of personal status and dignity among the auxiliary nursing personnel. The jobs which involve animal care are not very structured. In this work, the aspirant needs to like and understand animals without being afraid of them.

RELATED LEISURE PURSUITS: Pursuits which have demonstrated the person's dependability in attending to his responsibilities are pertinent to assessing his adaptability to this work. Activities such as caring for animals, visiting sick friends at home or in the hospital. Volunteer care of the sick. Volunteer nurse aide work. First aid and home nursing course. Evidence of domestic responsibilities effectively carried out may be important. Above average interest in person's own family and children's needs and experience in caring for them when sick might be considered.

ILLUSTRATIVE TEMPERAMENT ROLES: Adaptability to Specific Instructions is a very important temperamental capacity on the part of these people. In the institutional setting, aids and attendants particularly occupy a role which is formally defined according to tasks specifically delegated, and they are expected by both medical supervisors and patients to quickly respond to all kinds of direct orders. They need to be naturally friendly and warmhearted, i.e., gregarious to effectively perform their roles of providing direct patient care. Self-Control is important, because workers are frequently faced with such unnerving situations as the sight of blood, pain, anguish, and sorrow. In mental institutions they encounter threatening episodes involving unpredictable and dangerous mental patients who must be faced with presence of mind and physical courage. The LICENSED PRACTICAL NURSE requires objectivity in carrying out technical procedures according to medical instructions and rigorous accuracy in taking and recording temperatures and blood pressures, etc., and administering prescribed medicines.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Routine, Concrete Organized to work within a framework of institutional practice. Social Welfare interest is of extreme importance. Because the pay for these jobs is frequently low, the people in them need to be sustained by a very strong desire to be of service to people who are in need of help, if they are to find the work rewarding at all. They should be able to offer kindness, understanding, and encouragement to the patients whose days and nights of suffering and anxiety they attend.

CHILD CARE. Work, training, and leisure pursuits that relate to the care, amusement, and proper development of children.

Explore D.O.T. OGA: 307 Nursemaids

Related Career Possibilities: 306 Maids, Domestic; 349 Amusement and Recreation Service Occupations; 359 Misc. Personal Service Occupations; 092 Occupations in Primary School and Kindergarten Education

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Child Care, Child Psychology, First Aid, Home Nursing, Hygiene, Plays and Games, Recreation.

RELATED LEISURE PURSUITS: Acceptance of domestic responsibilities. Any activities which demonstrate dependability in dealing with children and a preference for a home or domestic to an industrial or office environment. "Baby sitting" to earn money. Volunteer work with children's shelters, Junior Villiage, Boy's Clubs, Girl Scouts, Sunday School, or other children's organizations. Volunteer nursing in children's hospitals. Playing games with children, reading to them, or telling them stories. Taking care of sick children. Caring for animals.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Sympathetic attitude toward children and good judgment in guiding their conduct. Sense of humor. Trustworthiness and dependability. Personal cleanliness and neatness. Good health; freedom from communicable disease.

ILLUSTRATIVE TEMPERAMENT ROLES: Dealing with People in devoting attention to child all day; in manifesting qualities such as cheerfulness, patience, and understanding; in relating to children in a manner to invite their obedience, respect, and friendship. Performing Adequately Under Stress in maintaining poise at all times, even when things happen which could be upsetting in dealing with a child.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Social Welfare in achieving relationship with child or children which will contribute to their physical, mental, and social development. People and Communication of Ideas in teaching children, organizing games for them, reading to them, and supervising their play.

HOSPITALITY AND ESCORTING SERVICES. Work, training, and leisure pursuits which involve hospitality services or serving as companion or escort to others.

Explore D.O.T. OGA's: 310 Hostesses and Stewards, Except Ship Stewards; 320 Boardinghouse and Lodginghouse Keepers; 350 Ship Stewards; 352 Hostesses and Stewards, n.e.c.; 353 Guides, Except Hunting and Fishing; 309 Domestic Service Occupations, n.e.c.

Related Career Possibilities: All occupations in 31 Food and Beverage Preparation and Service; 35 Misc. Personal Service Occupations; 29 Misc. Merchandising Work

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

PERTINENT INFORMATION (Special requirements, cultural and sociological data): In this field, workers must combine public relations and service functions. As there are no minimum educational requirements for many of the jobs, it is a promising field for those who have no specialized training, provided they have the necessary personal qualifications. They must have excellent grooming habits and be personable in total personality effect. The work is rewarding to those who enjoy a public relations and service role. It may be trying because of having to please people, often when they are difficult and unreasonable.

RELATED COURSES: There are no minimum educational requirements, although a high school education is frequently required because of the cultural level of the services performed. Courses in English, public speaking, social studies, business arithmetic, salesmanship, typing, first aid, hostessing, and foreign languages may be useful. Food preparation and serving, airplane hostess.

RELATED LEISURE PURSUITS: Activities which have brought the person in contact with others: church work, club projects, sports, dramatics, or other "hospitality" or "companion" activity.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious in that warmth and friendliness in dealing with people is essential, as well as tolerance for the eccentricities of others. Valuative in capacity to "size up" people and situations and act swiftly to put people at ease or smooth out difficulties which arise. Self-Controlled as the AIRPLANE HOSTESS who must sooth nervous passengers and present a calm, untroubled demeanor even in emergencies.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact for jobs requiring politeness in dealing with customers in a business environment. People and Communication of Ideas in jobs such as COMPANION who reads to, or converses and plays games with employer OR ESCORT who acts as social partner in dining, drinking, dancing, attending the theater, gambling, and other social pastimes.

LODGING SERVICES, N.E.C. Work, training, and leisure pursuits which are concerned with providing lodging facilities for others as offered in small apartment houses, hotels, motels, boarding and rooming houses, and trailer parks.

Explore DOT OGA's: 320 Boarding-house and Lodging-house Keepers
321 Housekeepers, Hotels and Institutions
329 Lodging and Related Service Occupations, n.e.c.

Related Career Possibilities: 187 Service Industry Managers and Officials

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: People who plan a career in hotel management can prepare for the work in colleges and university professional schools where they may study the basic functions of management such as finance, production, marketing, the behavioral sciences, and acquire a mastery of management tools and methods such as accounting, economics, mathematics and law, with specialized course work in Food Management, Hotel and Restaurant Administration, and related. However, only a relatively small percentage of people enter the field on the basis of formal training for it. Many advance from lesser jobs, such as assistant housekeepers and maids. The managers of small establishments frequently rise to be managers of large establishments. Managers of small establishments are recruited from a variety of backgrounds: previous homemakers, retired persons, people who are over age for a previous occupation, as well as from less responsible service occupations. These jobs are one of the best outlets for the person without specialized skills, but with good business sense, industry, and broad cultural background, who for one reason or another is seeking employment.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Sociologists consider these people to occupy what is termed an "ambiguous role" in that they are at once executives and at the same time, closely tied in with, and often advanced, from the "service" culture, with its personal service orientation and dependency on tips. However, many of them are independent operators and function as small entrepreneurs. The role varies greatly according to the size of the establishment and the setting in which the job is located whether formal urbanity, crossroads casualness, or a homey and cheery air is appropriate.

These people must have the ability to anticipate and coordinate, perhaps for accommodating a large number of convention delegates in one ballroom and a debutante's party in another ballroom on the same afternoon. No matter how small the establishment, there are all kinds of trifles to be looked after, which if overlooked, loom large: the radiator which is leaking, the soap that is missing, the new telephone book that wasn't delivered. No housekeeping detail is too small to be left unattended, and the efficient manager or housekeeper keeps all such details under continuous inspection. In that the person must be on call twenty-four hours a day, the sense of confinement and being chained down can become almost intolerable, and strain the endurance of many people. Yet in that the work draws upon abilities as diverse as public contact, clerical, housekeeping, building maintenance, buying, decorating, and managing, it requires persons who have the capacity to shift their focus of attention easily.

RELATED LEISURE PURSUITS: Socially inclined pastimes, expertness in the homemaking arts, and managing roles of any kind in connection with church, club, or other group may be indicators of suitability for these kinds of jobs.

ILLUSTRATIVE TEMPERAMENT ROLES: Gregarious to maintain a friendly atmosphere and to enjoy a role in which there is little privacy and little freedom from the demands made upon time by others. Versatile in being constantly on the go from one chore to another: showing and renting accommodations, collecting rents, resolving complaints, purchasing supplies, arranging for services, making minor repairs, keeping premises appropriately decorated, and a "hundred and one other things." Dominant in liking for, and ability to, function well in a role of "being in charge," and in willingness to assume and carry through all the responsibilities that go with maintaining the order and cleanliness of a building. Influencing to be able to impress upon would-be tenants the good points of the establishment. Self-Controlled to maintain efficiency and presence of mind in the face of vexing frustrations of many types: to handle complaints, settle disturbances and disputes among patrons, and endure round-the-clock duties without showing irritability of forgetfulness, without mixing the room keys or making mistakes with the mail. Valuative in that many decisions, such as accepting transient guests without references, making purchases, calling service people, etc., must be made on the basis of own best judgment. Prestige in that the executive nature of the work invests it with considerable status in the eyes of employees and tenants.

ILLUSTRATIVE INTEREST INVOLVEMENTS: A Business Contact interest is necessary for these workers, for they must maintain a courteous, businesslike manner in carrying out the many business transactions for which they are responsible. People and Communication of Ideas in that skill in the hospitality arts make the reputation of the establishment. Things and Objects for many people in these roles who tend to be very conscious and concerned with "my building," as they tend to express it. In spite of their heavy people involvement, it has been noted that the "building" may be their center of interest. When looking for a job, they may say "I'm looking for a building," or "I'm looking for a house," and they accept the position on the basis of their feelings about "the building."

CUSTOMER SERVING, N.E.C. Work, training, and leisure pursuits which involve dealing with the public to provide services in relation to the comfort, convenience, diversion, health, or cleanliness of customers. The pursuits may or may not involve the use of hands or mechanical equipment to provide the service. The recording and receiving of payments for the service is frequently involved and the contacts with people are likely to be transitory and impersonal. These kinds of activities tend to require that the worker maintain a businesslike appearance and demeanor.

Explore DOT OGA's:
329 Lodging and Related Service Occupations, n.e.c.
340 Attendants, Bowling Alley and Billiard Parlor
341 Attendants, Golf Course, Tennis Court, Skating Rink, and Related Facilities
342 Amusement Device and Concession Attendants
343 Gambling Hall Attendants
344 Ushers
349 Amusement and Recreation Service Occupations, n.e.c.
361 Laundering Occupations
369 Apparel and Furnishings Service Occupations, n.e.c.
371 Crossing Watchmen and Bridge Tenders
388 Elevator Operators
389 Building and Related Service Occupations, n.e.c.

Related Career Possibilities:
All other occupations in 3 Service Occupations.
23 Information and Message Distribution Occupations
237 Receptionists and Information Clerks
243 Direct Service Clerks, n.e.c.
290 Sales Clerks
291 Peddlers
292 Routemen
293 Canvassers and Solicitors
297 Demonstrators and Models
299 Merchandising Occupations, Except Salesmen, n.e.c.
912 Passenger Transportation Occupations, n.e.c.
(Taxi Drivers and Chauffeurs)

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Typically these people do not require specialized training, or if they do, it is of short duration. Although high school graduation is sometimes specified for some of the jobs, this area of work is one of the most promising for those who are not high school graduates to explore.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): SERVICE work of this type is characterized by the fact that it involves what are usually brief contacts with the public. The relationship between the server and the served is generally anonymous, hence characterized by unpredictability and impersonality, although in some of the jobs and in some situations there does develop a continuity of clientele, i.e., recipients of the service. Evaluation of the effectiveness of these people in their work is usually made by the general public which judges them by their ability to perform duties in a fast, efficient, and quiet manner. A neat appearance, cleanliness, general tidiness, and pleasant manner are expected of them. They are usually affected greatly in their economic status by the vagaries of tipping. They are nearly always required to have health certificates. Some of the jobs require licensing.

Sociologists have seen these types of occupations as being a refuge for people without a trade and have pointed out that they attract the occupationally transient, workers in other occupations who need to supplement their income by part-time work, and by those individuals who may prefer their contact with others to be transitory, or who dislike being subjected to the highly structured roles required in industry and the white-collar world.

RELATED LEISURE PURSUITS: Personal tasks for others, running errands, or otherwise waiting on them. Usher at school event, church, etc. Pin boy. Shoe shining. Telegraph messenger. Golf caddy. Paper route. Waiting on tables. Part-time gas station work. Hat and coat checker. Soda fountain. Delivery boy. Selling tickets. High school cafeteria work. School bus driving.

ILLUSTRATIVE TEMPERAMENT ROLES: Adaptable to Specific Instructions in that worker's role is one in which he must not mind taking direct orders, and pleasing others rather than self in way a task is done. Gregarious in that continually meets and deals with all kinds of people.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Business Contact in that activities generally require that the worker maintain a businesslike appearance and demeanor, wear a uniform or other type of attire suitable for meeting the public, and often involve the receiving and recording of payment from the recipient of the service.

PERSONAL SERVING, N.E.C. Work, training, and leisure pursuits which involve attending to the needs and desires of others in regard to their comfort, convenience, diversion, health, or cleanliness. The activities are frequently characterized by direct contact and close association with the recipient of the service. The relationship with the recipient is often a long continued one. Working attire is usually a uniform or work clothes of some other type.

Explore DOT OGA's:
301 Day Workers
302 Laundresses, Private Family
303 Housekeepers, Private Family
304 Housemen and Yardmen
306 Maids, Domestic
309 Domestic Service Occupations, n.e.c.
323 Maids and Housemen, Hotels, Restaurants, and Related Establishments
324 Bellmen and Related Occupations
346 Wardrobe and Dressing-Room Attendants
351 Pullman Porters and Train Attendants
357 Baggage Porters
358 Checkroom, Locker Room, and Restroom Attendants
366 Bootblacks and Related Occupations

Related Career Possibilities:
All other occupations in 3 Service Occupations
23 Information and Message Distribution Occupations
237 Receptionists and Information Clerks
243 Direct Service Clerks, n.e.c.
290 Sales Clerks
291 Peddlers
292 Routemen
293 Canvassers and Solicitors
297 Demonstrators and Models
299 Merchandising Occupations, Except Salesmen, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: There are usually no formal educational requirements. The ability to cook. sew. wash and iron, clean house, care for children, and operate household equipment such as vacuum cleaners, floor waxers, dishwashers, and electric mixers is what employers usually look for in household workers.

Home economics courses offered in high schools, vocational schools, and junior colleges, as well as training courses sponsored by Federal agencies, State employment service offices, and local welfare departments, are all helpful in developing home service skills. Portering and wardrobe courses for some jobs.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): These people perform the personal services for others, which, it has been said, "they are too busy, too lazy, or too unskilled to do for themselves." The jobs are characterized by the fact that the services performed require direct contact and close association with the recipient of the service. For some of the services, e.g., shoeshining, the customer directly pays for the service; for others, e.g., porters, bellhops, the financial transaction between the customer and the service person is limited to tipping. However, for many of the occupations, e.g., housekeepers, private family; domestic maids, housemen, and the like, the relationship is directly one of employer-employee and renumeration is in terms of an established wage. In the two first examples, although the service performed usually requires direct contact with the recipient of the service, the relation between the server and served is anonymous and of brief duration. Those service occupations which are on a direct employer-employee basis, however, tend to involve a very different type of relationship, which evolves, in many cases, into personalistic ties with the employer.

Two and one-half million household workers were employed in 1965, according to the Bureau of Labor Statistics. Among these household workers, the great majority are maids of various kinds. Private household workers today represent a distinct break with the past in that less than 10 percent live in their employer's home.

There are frustrations which may be associated with the work. There is the danger of becoming the well-known "drudge-of-all-work" in many homes. For those who "live in," there is often no clear-cut division between employed and free time, and this can be a source of great dissatisfaction. The individual worker in a private home is isolated from the company of other workers like herself and may be frustrated because she has no role in a work group. The multiplicity of duties which employers assign may lead to misunderstandings, the worker feeling she is being called upon to perform tasks which she did not bargain to do. Another source of frustration to these workers is that there is no way to achieve impersonal evaluation of their worth, their primary duty being to please someone, so that they cannot become proficient in terms of some objective standard but only through acquiring a thorough knowledge of the peculiarities of their employers.

RELATED LEISURE PURSUITS: Personal tasks for others, caring for their clothes, helping them dress, running errands, or otherwise waiting on them. Cleaning house. Pin boy. Golf caddy. Hat and coat checker. Delivery boy. Consider those listed for other areas of Service Work.

ILLUSTRATIVE TEMPERAMENT ROLES: Adaptable to Specific Instructions in that work is usually closely supervised and all that is done is closely inspected. Gregarious to work in close contact with people. Adaptable to Repetitive Work for some jobs which involve a daily routine of household tasks.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Routine, Concrete Organized in that work generally follows a regular daily course.

BUILDING SERVICES, N.E.C. Work, training, and leisure pursuits that involve the cleaning and upkeep of buildings.

Explore DOT OGA's: 381 Porters and Cleaners
382 Janitors
389 Building and Related Service Occupations, n.e.c.

Related Career Possibilities: 32 Lodging and Related Service Occupations
35 Miscellaneous Personal Service Occupations
84 Painting, Plastering, Waterproofing, Cementing and Related Occupations
86 Construction Occupations, n.e.c.
891 Occupations in Structural Maintenance, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: There are no general educational requirements associated with these jobs. Fumigating jobs require special training in the process. Most cleaning type jobs are learned through on-the-job training, as is janitorial work. Janitors, actually, are frequently older men who have acquired the skills needed in other work. However, since janitors do require practical working knowledge of electricity, woodworking, plumbing, and other tasks found around homes, a general shop course in high school with exploratory work in several areas is considered valuable, as well as shop courses in wood, metal, electricity, and a survey course in physical science.

RELATED LEISURE PURSUITS: Any activities which have demonstrated a knack for working with hands, hand tools, and mechanical equipment such as household appliances. "Fixing" things around the house, handy at "do-it-yourself" chores such as painting, rough carpentry, replacing fuses, repairing damaged woodwork, replacing loose brick. Gardening, trimming shrubs and hedge. Raking and burning leaves. Operating household appliances of any kind. Helper or handyman to carpenter, electrician, plumber or other construction skill.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): People in building services include (1) the janitor who is often called a "jack of all trades," in that his multiple duties consist of aspects of many trades; (2) building cleaners who may perform one, or a combination of such duties as mopping, sweeping, dusting, polishing, waxing, and cleaning tasks; and (3) fumigators and exterminators who use chemical solutions and gases to destroy pests. These latter are frequently required to be licensed.

Physical activity is dominant in these jobs and they generally require good use of arms, back, and legs. Many of them require the person to be able to assume many positions such as crouching, reaching, and bending. They are definitely the "soiled-hands" type of activity and require tolerance for dirt and grime, and some for using machines which hum and vibrate. Although the three types of work included here share many common tasks, the work roles are distinctly different. Number one, the janitors, occupy a rather complex work role. They must work without close supervision and definitely must be able to function "on their own." They are employed by the building owner, but as one has stated, "you have fifty bosses." It is indeed true that they are at the beck and call of the tenants, and this is a challenge to the janitor's social skills. The janitor tends to see himself as his "own boss" and as being a responsible guardian of the building and its occupants. He is expected to know what to do in the event of an emergency, whether it is in dramatic form, such as a breakdown of the heating system on the coldest winter night or the simply messy one of the stuck garbage disposal. He must be acutely aware of the danger of fire, and other possible emergency situations. As he must live on the premises, is subject to call around-the-clock, and as he is faced with endless minor annoyances, he may get very "fed up" and feel great need for a "change in scenery," to get away from the building.

Number two, the cleaning people, are employed to do their work, usually on a daily or hourly basis, such work frequently being in the evenings after daytime employees have left the premises. They may work as more or less solitary workers or in teams. The work situation may be quite informal and free, with a great deal of camaraderie. Although the "building" may exist as a workplace for the daytime employees, it is seen by the cleaning force as the object of their work and they may come to see it as existing for the purpose of providing them with employment.

Number three, the building fumigators, function in a role which involves something of public contact, in that they may solicit business, do individual jobs and be paid on this basis, and assume the role of "professional experts," who have specialized knowledge not available to the "layman" as to that state of the building, e.g., termite or pest infestation and the method and cost of treatment required to remedy the situation.

ILLUSTRATIVE TEMPERAMENT ROLES: In some jobs, as the janitor, the emphasis may be on variety and change. He may be required to act in a businesslike manner while operating a passenger elevator, showing a room or apartment, or dealing with a tenant complaint. The next hour he may be in a crawl space on his hands and knees checking out a leaking water line. He must be able to turn his hand at "hundreds of minor tasks." In contrast, the specialized building cleaning person (who may be a man or woman) must be adaptable to repetitive work in performing a single task, such as sweeping, dusting, or running a power-driven machine to polish, wax, etc. Janitors and fumigating people require adaptability to dealing with people; however, this is not as aspect of straight cleaning work.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Things and Objects for many of the tasks. Business Contact for jobs which require meeting the public.

BASIC VOCATIONAL DIRECTION

PRIMARY OUTDOOR

Farming
Fishing (Includes Hunting and Trapping
Aquatic Animals)
Navigation
Marine Life Cultivation
Forest Conservation
Logging and Related
Hunting and Trapping (Forest Animals)

PRIMARY OUTDOOR (GENERAL FIELD DESCRIPTION)

Preference for an OUTDOOR environment is frequently an overriding consideration in vocational choice. This fact has been recognized in the development of the Kuder Preference Record and other resources that are widely used in guidance and personnel work.

Jobs in the PRIMARY OUTDOOR group involve fundamental natural processes associated with (1) Farming, (2) Marine Work (including navigating water-going craft and catching and breeding aquatic life), and (3) Forestry (including logging and forest preservation).

Traditionally, the best farmers are considered to come from farm homes, the best woodsmen from forest environments, and the best marine workers from the ranks of those who have grown up around the water. This is largely true today. Because so many of the habits, attitudes, sensitivities, and knowledges needed in such occupations are most deeply and easily established in childhood and youth, one should think twice before suggesting certain PRIMARY OUTDOOR callings to anyone reared in a city environment. However, modern technology has provided easy communication with remote places, creature comforts and conveniences, machine substitutes for manual labor, and other means of reducing the contrasts between urban-industrial and primary outdoor environments and activities. Consequently an increasing number of farming, forestry, and marine occupations can be entered successfully by people from other backgrounds.

Training for occupations in the PRIMARY OUTDOOR group varies greatly. Mechanization has revolutionalized many jobs, altering training requirements. As stated above, probably the best initial training for farming, fishing, seafaring, hunting, or logging still is to grow up in a family that follows the pursuit. Experience as a hired worker often provides the necessary background. Extensive, organized courses in agricultural technologies are taught on various levels in high schools, colleges, and through extension services. In the field of Marine Work, most Navigation jobs are apprenticeable, but technical courses are required for some. Certain jobs in Fish Culture, particularly in government service, require special training. The same is true for certain primary outdoor occupations in Forestry notably in the area of Forest Preservation.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: All agricultural, forestry, and navigation courses.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): The role of the worker in relation to his environment is the distinguishing characteristic of the PRIMARY OUTDOOR group. All the jobs provide the face-to-face encounter with nature which is presumed to be preferred by certain temperaments to an industrial, office, or other man-made setting. This temperament may be manifested by a love of the land or of "the sea," in working with growing things, or simply in being outside under the open sky.

RELATED LEISURE PURSUITS: Potential may be evidenced by liking for pursuits that show motivation to be physically active and out in all kinds of weather.

ILLUSTRATIVE TEMPERAMENT ROLES: The work is often done in physical isolation from people, requiring that the worker be self-sufficient, independent, and capable of a high degree of personal initiative and resourcefulness. Working in Isolation from others is a frequent requirement. However, though the work may be isolated from town and city, as with a distant logging camp or ship on the high seas, it may involve a crew and require close teamwork. The worker in such a team situation will need to be Gregarious enough to tolerate close and continuing contact with others and to possess a strong sense of responsibility for a particular function as it may relate to the productivity and welfare of the group.

In many outdoor jobs Self-Control is necessary to Perform Adequately Under Stress when Confronted with the Critical or Unexpected or Taking Risks. This can be manifested in presence of mind to deal effectively with storm situations or rescue operations at sea, quick thinking in maneuvers to control forest fires, or steady nerves not to panic when confronted by dangerous animals. The Dominance required to Direct, Control, and Plan is often important as with the farmer who is his own boss, the captain in command of his ship, or the woodsman who is head of a logging operation.

ILLUSTRATIVE INTEREST INVOLVEMENTS: An interest in the Outdoors and nature adaptability is a basic requirement. A Scientific interest is associated with many of the jobs which require considerable knowledge of the subject matter of one or more sciences, and understanding of and respect for scientific methods and findings. On other jobs, such as logging, the stress is on work techniques and the operation of equipment. Here the frequent interest is Working with Processes, Machines, and Techniques.

FARMING. Work, training, and leisure pursuits in raising and harvesting crops or breeding and caring for poultry, livestock, or other farm animals.

Explore DOT OGA's: 40 Plant Farming Occupations; 41 Animal Farming Occupations; 42 Misc. Farming Occupations; 180 Agricultural, Forestry, and Fishery Managers and Officials

Related Career Possibilities: 44 Foresters; 45 Hunting, Trapping and Related; 46 Animal Caretaking Occupations; 040 Occupations in Agricultural Science; 049 Occupations in Life Science, n.e.c.; 073 Veterinarians; 079 Occupations in Medicine and Health, n.e.c.; 096 Home Economists and Farm Advisers

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Agricultural Meteorology, Agronomy, Animal Husbandry and Genetics, Botany, Citrus Culture, Crop Rotation, Dairy Science, Entomology, Farm Economics and Management, Farm Mechanics, Farm Shop, Fertilizers, Floriculture, Fruits, Gardening, Horticulture, Hybridization, Nutrition, Pasture and Forage Crops, Plant and Animal Ecology, Physiology, Poultry Raising, Soil Chemistry, Soil Conservation, Turf and Ornamentals, Veterinary Science, Weed Control. Any course given by agricultural schools and societies and State departments of Agriculture.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Scientific methods of crop rotation, hybridizing, seasonal planning, fertilizing, pest and disease control, animal breeding. Good judgment re: weather data; market conditions; how to buy seed, equipment, fertilizer. Minor veterinary procedures. Ability to keep records. Respect for sanitary regulations (especially in dairying). Operate tractors, combines, etc. Willingness to work very hard. Puntuality in timing such operations as milking cows, feeding animals, or cultivating, planting, and harvesting crops in terms of time of day, weather conditions, state of ripeness, etc.

RELATED LEISURE PURSUITS: Grange, 4-H Club, or Future Farmers of America activities. Natural science and agricultural magazines, U.S. Department of Agriculture farm bulletins, etc. Crossbreeding plants or animals. Studying soil conservation. Vacation work with a harvest crew. Experimenting with an irrigation system. Hunting mushrooms, berries, etc. Repairing tractors, plows, mowing equipment, etc. Breeding and exhibiting poultry. Raising pets - dogs, cats, birds, goats, etc. Breeding bees and preparing apiary exhibits. Preparing animals for livestock shows and fairs. Any other hobbies involving exploring or observing weather conditions, plants growing, and wildlife. Truck, flower, rock, roof, or window gardening.

ILLUSTRATIVE TEMPERAMENT ROLES: Farmers are valuative in matters such as rotation plan for crops, judging progress of growing crops, anticipating seasonal effects on cultivating or harvesting schedule, and estimating market trends. They frequently work alone for hours in such tasks as plowing, pruning orchards, or grading poultry. They display versatility in constantly looking after a number of activities concerned with crops, animals, and equipment AND in a variety of duties occasioned by seasonal cycle of planting, cultivating, harvesting, and marketing. Farming provides an opportunity for independence and unlimited freedom of action in planning and managing work activity.

ILLUSTRATIVE INTEREST INVOLVEMENTS: First and foremost is an interest in Nature and Outdoor Life which manifests itself in preference for country to city living, in love of the land, and taking pleasure in growing things - plants or animals. Tangible, Productive Satisfaction in the desire to produce flourishing crops and fine yields OR in breeding first-class animals. The farmer is always working toward final results. Scientific in that some knowledge of scientific method and subject matter of various sciences (such as chemistry, entomology, and horticulture) are employed in experimentation and trying out latest methods, as well as in overall farm management. Working with Machines, Processes, and Techniques in operating and maintaining farm equipment. Prestige in the role of leadership which the progressive farmer usually attains in his community AND in such activities as acquiring registered herds, breeding pedigreed animals for show, and exhibiting prize-winning crops at fairs. People and Communication of Ideas as the GREENHOUSE FLORIST who experiments to develop strains of flowers and plants for pleasing colors or other esthetic qualities.

FISHING. Work, training, and leisure pursuits concerned with the catching or gathering of fish and other forms of aquatic life (such as clams, lobsters, oysters, sponges, and Irish moss). Such activities may take place on inland streams or on the open seas. It may or may not involve the handling of boats. Diving may or may not be involved.

Explore DOT OGA's: 431 Net, Seine, and Trap Fishermen; 432 Line Fishermen; 437 Sponge and Seaweed Gatherers; 439 Fishery and Related Occupations, n.e.c.

Related Career Possibilities: 433 Fishermen, Misc. Gear; 435 Whaling Occupations; 436 Marine Life Cultivation and Related Occupations; 197 Ship Captains, Mates, Pilots, and Engineers; 911 Water Transportation Occupations

HUNTING AND TRAPPING (AQUATIC ANIMALS). Work, training, and leisure pursuits concerned with hunting aquatic animals (such as seals, walruses, and whales) with guns, spears, harpoons, and related weapons. Hunting may take place on shore or abroad fishing vessels. Diving may or may not be involved.

Explore DOT OGA's: 433 Fishermen, Misc. Gear; 435 Whaling Occupations; 439 Fishery and Related Occupations, n.e.c.

Related Career Possibilities: 431 Net, Seine, and Trap Fishermen; 432 Line Fishermen; 437 Sponge and Seaweed Gatherers; 197 Ship Captains, Mates, Pilots and Engineers; 911 Water Transportation Occupations; 436 Marine Life Cultivation and Related Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Occupations involving these activities are to a large extent an inherited way of life. For the most part people grow up in the occupations and the skills involved are acquired on the job.

RELATED LEISURE PURSUITS: Collecting fishing rods, flies, and other tackle and trying them out. Fashioning fish flies. Going deep sea fishing. Fishing or crabbing in a bay, stream or pond. Mending sails. Swimming and diving. Boating.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): People in these activities are characterized by being "at home" around water. They are apt to be good swimmers. Many are divers and some skin divers. They know the habits of animals hunted and the use of weapons for killing. They are skilled in setting and using nets, lines, hooks, harpoons, spears, guns, seines, traps and pots in terms of the fish to be caught, prevailing weather, and conditions of aquatic terrain. They require tolerance for continuous smell of fish and often for heavy, wet work. They must be expert in preparing bait and able to mend their equipment. Many of the activities require the ability to operate dredges, rakes, and forks.

ILLUSTRATIVE TEMPERAMENT ROLES: These people must be able to perform adequately under stress when faced with the critical or unexpected in activities such as diving for sponges, harpooning swordfish, and in coping with hazards during storms. The SHORE FISHERMAN or the HUNTER who work alone for considerable periods must adjust to working in isolation. Members of fishing crews, however, who live in close quarters and who must work in close cooperation as a team must adjust to dealing with people. Crew members who must continually obey specific orders require the capacity to function in a submissive role.

ILLUSTRATIVE INTEREST INVOLVEMENTS: An outdoor interest is manifested in liking to be outdoors and around water and in preference for fishing or hunting as a way of life.

NAVIGATING. Work, training, and leisure pursuits in which the most significant factor is the navigation and deck service of water craft.

Explore DOT OGA's: 197 Ship Captains, Mates, Pilots, and Engineers;
911 Water Transportation Occupations

Related Career Possibilities: All Occupations in 91 Transportation;
025 Occupations in Meteorology;
018 Occupations in Surveying

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Training varies greatly according to the type of water craft involved. Obviously the requirements for the command of large ocean liners or naval vessels are for highly trained professional personnel, whereas the tramp steamer or small fishing craft may be manned by persons with limited training. Supporting occupations may or may not require considerable technical training. Pertinent courses include: Algebra, Cargo Handling, Celestial Navigation, Geometry, Meteorology, Morse Code, Navigation, Physical Geography, Physics, Piloting, Powerboat Operating, Seamanship, Steering.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): A liking for "the sea," perhaps a compulsion to be on the move, to "see the world," often characterizes the people in these pursuits. Some of their knowledges and abilities: Principles of piloting and navigation. Handling boats. Use of compasses, chronometers, barometers, anemometers, navigation tables, radio aids, and plotting instruments. Procedures for taking radar bearings, depth soundings, determining ship speed and position. International Morse Code. Time Zones. Celestial navigation, storm indications, weather charts. Use of flags, signals, and methods of identifying ships and aircraft. Cargo handling, ship rigging, and safety precautions. Swimming.

RELATED LEISURE PURSUITS: Steam or motor boat racing. Competing in a sailboat regatta. Steering boats and learning use of instruments such as compass and sextant. Sailing and rowing. Reading "Boating," "Yachting," "Motor Boating," magazines or sea adventures and novels about explorers, pirates, or other "seafaring" people. Taking a cruise. Going deep-sea fishing. Belong to Sea Scouts. Winning a signaling or canoeing Scout badge. Learning about different kinds of ships. Making a blinker or other signaling device. Learning Morse Code. Other hobbies involving water and boats or reading of nautical science subjects. Navy or Coast Guard Service.

ILLUSTRATIVE TEMPERAMENT ROLES: Dominance is highly important for ship's officers in the command of ships. All activities in this field require the self-control to perform under stress. Presence of mind and quick thinking are important in emergencies such as storms and carrying out rescue operations at sea. The capacity to be rigorous is involved in steering ships and maneuvering in restricted places such as going alongside another ship at sea and docking in port OR in unwavering vigilance while on lookout duties. The ability to be objective and evaluate against measurable, verifiable criteria is involved in taking radar bearings, water depth soundings, and celestial observations as a guide in navigating a ship. On the other hand, a valuative approach is required to interpret weather messages and determine course of action during storm situations OR in steering a course and looking out for buoys, rocks, or other obstructions. Versatility is often involved in coping with a wide diversity of situations.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Outdoor Interest manifested in a liking for "the sea," perhaps a compulsion to be on the move, to "see the world." Working with Machines, Processes, and Techniques in such activities as steering a vessel or in observing ship's course when automatically steered by gyroscope.

Prestige in being the superior of all ship masters as the PORT CAPTAIN OR being in charge of a ship in which role must command respect and obedience of men (for ship's officers).

MARINE LIFE CULTIVATION. Work, training, and leisure pursuits concerned with hatching and rearing fish and other forms of aquatic life, including activities such as the operation and maintenance of hatcheries and the stocking of ponds, rivers, or lakes.

Explore DOT OGA: 436 Marine Life Cultivation and Related Occupations

Related Career Possibilities:
431 Net, Seine, and Trap Fishermen;
432 Line Fishermen;
433 Fishermen, Miscellaneous Gear;
435 Whaling Occupations;
437 Sponge and Seaweed Gatherers;
439 Fishery and Related Occupations, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Aquatic Biology, Fish Culture, Habitat Influences, Ichthyology, Marine Biology, Nutrition and Food Habits of Fish, Propagation and Management.

RELATED LEISURE PURSUITS: Visiting aquariums. Fish and aquarium keeping. Experimenting with goldfish and tropical fish. Stocking and keeping a fish pond. Cross-breeding fish. Reading Field and Stream.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): People in these activities must be well informed on the habits of fish and know species of fish. They require skill in collecting fish eggs, fertilizing, and incubating, and in care of spawn. They must know how to use a microscope and be able to construct breeding ponds and equip them. They require willingness to wear protective clothing.

ILLUSTRATIVE TEMPERAMENT ROLES: They are valuative in that they must be able to make determinations on the basis of expert knowledge of such things as when and where to make fish transfers. They must be rigorous in keeping spawn trays free of bacteria and parasites by careful daily examination with microscope.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Outdoor Interest as manifested in liking to work outdoors much of the time and in working with living things. Scientific interest in fish breeding experimentation and in respect for findings.

FOREST CONSERVATION. Work, training, and leisure pursuits carried out on streams, fields, and forest areas to protect plant and animal life from destruction by fire, disease, or depredation by people; to reforest by raising and transplanting tree seedlings; and to control erosion and leaching of forest soil.

Explore DOT OGA's: 441 Forest Conservation Occupations;
409 Plant Farming Occupations, n.e.c.

Related Career Possibilities: 040 Occupations in Agricultural Sciences; 041 Occupations in Biological Sciences; 40 Plant Farming Occupations; 180 Agriculture, Forestry, and Fishing Industry Managers and Officials; 442 Occupations in Production of Forest Products, Except Logging; 449 Forestry Occupations, n.e.c.; 94 Occupations in Logging

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Sometimes workers may enter this field by means of essentially laboring work as a helper or aide. Science, mathematics, biology, and physical geography courses in high school are helpful.

Courses: Fire Control, Fire Fighting, Forest Products, Forest Protection, Forestry, Geology, Nature Study, Park Management, Range Management, Silviculture, Wildlife Management, Wood Technology.

RELATED LEISURE PURSUITS: Hobbies which develop a knowledge of the nature and characteristics of woodlands, self-reliance in the woods, a knowledge of wildlife. Summer employment such as camp counselor, fire guard, or other work in the woods. Visits to natural history museums. Boy Scout experience and earned badges in all phases of outdoor life, such as nature study, camping, knot tying. Science Club activity involving projects such as planting trees, collecting meteorological data, insect control. Open air activities: hiking, hunting, trapping, enjoying parks, picnicking in woods, going on camping trips and "roughing it," sleeping in the open air. Being physically active and out in all kinds of weather. Serving as volunteer lookout for forest fires or as a firefighter. Treating tree diseases and freeing trees or insect pests. Reading interests in silviculture: magazines such as Field and Stream, Nature Magazine, and Outdoor Life.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Work in this field provides opportunity for those who may be interested in professional forestry but for one reason or another do not take full professional training in forestry. There are many occupations which are closely allied to forestry but which may or may not require professional training, depending upon the job setting: Fire Assistant, Lookout, Patrolman, Warden or Ranger; Forest Technician; Scaler; Scientific Aid; Smoke Chaser; Timber Cruiser; and Tree Surgeon, among others.

People choosing this work should have a sincere love for the out-of-doors, the ways of nature, and the conservation of wildlife. They should get satisfaction from seeing improvement of natural resources, land reclaimed, forests kept healthy and flourishing. Most such jobs require the workers to be out-of-doors in all weather, and they are often required to travel around over hazardous terrain. They need to be physically fit and have keen distance vision for scanning remote forest areas for signs of smoke. It is said that people in forest conservation have great need of courage and faith to maintain optimism for the future of their work in the face of forest fires and blighting disease which so often brings ruination to the forests they fight so hard to conserve. Knowledge of flood control procedures. For some jobs, horseback riding. For some localities, use of canoes, skis, and snowshoes.

ILLUSTRATIVE TEMPERAMENT ROLES: These people are objective in the application of scientific method and dependable observation to tasks such as controlling forest fires and caring for forest planting. They are valuative in making judgments on the basis of experience of such things as disease conditions in trees and best methods to apply to gain control of a forest fire. Self-Control for the courage and presence of mind required in battling forest fires, and in dealing with forest dangers such as encounters with dangerous animals, getting lost in the snow, remote areas, etc. Adaptability to working in isolation for jobs such as the FIRE LOOKOUT who must live alone for months at a time.

ILLUSTRATIVE INTEREST INVOLVEMENTS: An outdoor interest as manifested in a preference for working in a woodlands environment. Scientific in appreciation of scientific management of forests and forest lands. For the TREE SURGEON who works with trees to enhance their beauty by proper pruning, an artistic sense is required which might be termed an Abstract, Creative interest.

PRIMARY OUTDOOR
FORESTRY

LOGGING AND RELATED. Work, training, and leisure pursuits concerned with the gathering of forest products, involving such activities as marking, tapping, sawing, trimming, chopping, or felling trees, and transporting logs or other products from forest areas. Also included are non-logging forestry activities such as the gathering of ferns, mistletoe, barks, gums, resins, saps, seed-cones, and wild nuts and berries.

Explore D.O.T. OGA's: 940 Timber Cutting and Related Occupations; 941 Log Inspecting, Grading, Scaling, and Related Occupations; 942 Log Sorting, Gathering, Storing, and Related Occupations; 442 Occupations in Production of Forest Products, Except Logging; 449 Forestry Occupations, n.e.c.

Related Career Possibilities: 441 Forest Conservation Occupations; 45 Hunting, Trapping, and Related Occupations; 018 Surveyors, n.e.c.; 040 Occupations in Agricultural Sciences; 180 Agriculture, Forestry, and Fishing Industry Managers and Officials

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

COURSES: Skills involved in these pursuits are acquired on the job. In logging per se, workers usually begin as laborers or by on-the-job training in "felling," i.e., the correct method of felling trees. Six months on the job is considered necessary to acquire this skill. It is a skill which is a requisite foundation for all high level jobs in the field of logging.

RELATED LEISURE PURSUITS: Learning the nature and characteristics of woodlands. Open-air activities: hiking, hunting, scouting, trapping, going on camping trips and "roughing it." Being physically active and out in all kinds of weather. Mountain climbing. Clearing brush. Climbing trees. Vacation work around a sawmill.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Sensory acuity and alertness to take care of self in woods and avoid accidents. Although the GREENS PICKER may pick ferns, mistletoe, and coniferous materials while on lonely strolls, for the most part workers in these pursuits are members of crews and must adapt to working in a team situation. The work involves much heavy lifting, of 100 pounds or more. The workers are exposed to all weather conditions and in many of the jobs subject to the vibration of saws. They face a variety of hazards: danger of cuts from axes and saws; danger of being struck by falling or flying limbs or being crushed under falling trees; danger of falling from springboard when felling trees from elevated positions. Specific knowledges and abilities: Judgment in selection of trees to be cut. Techniques of tree felling. Power skidding. Skid rigging. Use of climbing spurs and safety belt. Operation of sawmill equipment.

PRIMARY OUTDOOR
FORESTRY

LOGGING AND RELATED. Work, training, and leisure pursuits concerned with the gathering of forest products, involving such activities as marking, tapping, sawing, trimming, chopping, or felling trees, and transporting logs or other products from forest areas. Also included are non-logging forestry activities such as the gathering of ferns, mistletoe, barks, gums, resins, saps, seed-cones, and wild nuts and berries.

Explore D.O.T. OGA's: 940 Timber Cutting and Related Occupations; 941 Log Inspecting, Grading, Scaling, and Related Occupations; 942 Log Sorting, Gathering, Storing, and Related Occupations; 442 Occupations in Production of Forest Products, Except Logging; 449 Forestry Occupations, n.e.c.

Related Career Possibilities: 441 Forest Conservation Occupations; 45 Hunting, Trapping, and Related Occupations; 018 Surveyors, n.e.c.; 040 Occupations in Agricultural Sciences; 180 Agriculture, Forestry, and Fishing Industry Managers and Officials

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

COURSES: Skills involved in these pursuits are acquired on the job. In logging per se, workers usually begin as laborers or by on-the-job training in "felling," i.e., the correct method of felling trees. Six months on the job is considered necessary to acquire this skill. It is a skill which is a requisite foundation for all high level jobs in the field of logging.

RELATED LEISURE PURSUITS: Learning the nature and characteristics of woodlands. Open-air activities: hiking, hunting, scouting, trapping, going on camping trips and "roughing it." Being physically active and out in all kinds of weather. Mountain climbing. Clearing brush. Climbing trees. Vacation work around a sawmill.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Sensory acuity and alertness to take care of self in woods and avoid accidents. Although the GREENS PICKER may pick ferns, mistletoe, and coniferous materials while on lonely strolls, for the most part workers in these pursuits are members of crews and must adapt to working in a team situation. The work involves much heavy lifting, of 100 pounds or more. The workers are exposed to all weather conditions and in many of the jobs subject to the vibration of saws. They face a variety of hazards: danger of cuts from axes and saws; danger of being struck by falling or flying limbs or being crushed under falling trees; danger of falling from springboard when felling trees from elevated positions. Specific knowledges and abilities: Judgment in selection of trees to be cut. Techniques of tree felling. Power skidding. Skid rigging. Use of climbing spurs and safety belt. Operation of sawmill equipment.

ILLUSTRATIVE TEMPERAMENT ROLES: Self-Control for presence of mind in coping with hazards associated with felling and rigging of trees. For FOREMEN, who must plan and direct crews of men, Dominance; for members of such crews, adaptability to working under specific instructions. Crew members who must work in close contact and cooperation and who adjust well to the situation tend to be gregarious. Objectivity in tasks such as selecting logs to be cut in terms of specified sizes and types of trees. Valuative in expertness of judgment developed in assessing such things as wind direction and terrain features in relation to tree to be cut and surrounding trees so that the tree can be felled with minimum damage to it and other trees.

ILLUSTRATIVE INTEREST INVOLVEMENTS: An Outdoor Interest is manifested in a preference for working in a forest environment. For many logging jobs, Working with Machines, Processes, and Techniques in sawmilling operations or in using equipment to cut down trees and transport logs to sawmills or elsewhere.

HUNTING AND TRAPPING (Forest Animals). Work, training, and leisure pursuits concerned with the use of firearms or traps to catch animals in forests or fields, or near the shores of inland bodies of water.

Explore DOT OGA's: 451 Hunting and Trapping Occupations;
452 Hunting and Fishing Guides

Related Career Possibilities: 41 Animal Farming Occupations
43 Fishery and Related Occupations;
44 Forestry Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: People usually grow up in this type of occupation and the skills are acquired by engaging in the activities.

RELATED LEISURE PURSUITS: Going on overnight hunting trips. Guiding hunting parties. Hunting coon, duck, rabbit, deer, or other wild game. Belonging to a game club. Training dogs to hunt. Target or skeet practice or shooting on a rifle range. Competing in shooting contests. Building and setting traps to catch rabbits or other small animals.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Sensory acuity and alertness to take care of self in woods and avoid accidents. Skill in pitching camp. Use of firearms, traps, snares, lures, and poisons to hunt game. Environs and habit characteristic of wildlife. Game and trapping laws and regulations. Trap baiting and camouflage. Treating and marketing pelts.

ILLUSTRATIVE TEMPERAMENT ROLES: Self-Control for the courage and presence of mind required to deal with forest dangers such as encounters with dangerous animals or getting lost in the snow, remote areas, etc. Adaptability to isolation as the TRAPPER whose days are spent alone setting and checking his traps.

ILLUSTRATIVE INTEREST INVOLVEMENTS: An Outdoor Interest is manifested in a preference for working in a forest environment.

What work do we call industrial? It is that division of the world of work which comprises the mechanical and manufacturing branches of productive work, as distinguished from that which chiefly involves dealing with people (including the organizing and coordinating of people who make things) or the manipulating of symbols. It includes all the people who live mainly by extracting and producing things, except for those in the agricultural and seafaring industries. These people are frequently alluded to as "blue-collar," i.e., paid on a weekly, daily, hourly, or piece-work basis in contrast to "white-collar," i.e., salaried and required to be well-groomed on the job.

The "know-how" of these people relates to the processes and products of manufacturing and they are able to work with their hands and to man the production machines. Their sensitivities and intuitions are highly developed in relation to the behavior of things and the manner in which things and forces interact. They frequently wear work clothes of some type and many of the activities are of the "soiled-hand" type.

These people tend to be strongly oriented towards the physical and material in their nonwork life and as a group they tend towards a greater use of hands and utilization of an outdoor and physial setting than do typical "white-collar" persons. Surveys on the leisure pursuits of persons in industrial work have tended to show inclinations towards home-centered activities and pride in ownership: keeping the house and automobile in good repair, craft hobbies, growing a garden, having mechanics and woodworking shops in basement or garage, keeping a neat lawn and well-trimmed hedge; card games, watching TV, outdoor barbecues, "lawn sitting." Other favored pursuits seem to be a liking for motoring: scenic tours, the mountains, and beach; activities such as family reunions, church work, sewing circle and related women's clubs, leadership in young people's activities; action sports such as hiking, swimming, hunting, fishing; and reading which emphasizes current events, do-it-yourself articles, who-done-its, westerns, and condensed books.

INDUSTRIAL WORK - TRADE AND CRAFT LEVEL

The MACHINE TRADES AND CRAFTS are made up of a wide array of typically "blue-collar" occupations that require mechanical or related ability and extensive backgrounds of apprenticeship or other training. The basic crafts are among the oldest of occupations. Proficiency in them requires an understanding of the properties of materials and special methods or processes used in creating finished products, usually through skillful use of hands, hand tools, or equipment. Many emerging jobs in modern technology are considered to be crafts because they require these same abilities.

The Machine Trades for the most part are comprised of much younger occupations which came into being after the widespread introduction of machinery. These occupations are closely related to continuing extensions in the use of industrial machinery and developments of machine design; consequently they are highly subject to re-engineering of task content. Proficiency in the Machine Trades depends primarily on understanding of machine capabilities or the mechanics of their operation. Both Machine Trades and Crafts require judgment in choosing work methods and laying out operations.

The worker functions of Setting-Up and Precision Working characterize jobs on this level. Many of the jobs which involve the worker functions of Operating-Controlling, Driving-Operating, and Manipulating may be considered on the Trade and Craft level.

INDUSTRIAL WORK - TRADE AND CRAFT LEVEL

ILLUSTRATIVE TEMPERAMENT ROLES AND INTEREST INVOLVEMENTS

Throughout the MACHINE TRADES AND CRAFTS group integrity of workmanship is the primary essential, whether it is in wiring a house, machining an instrument part, setting tiles, repairing a watch, or distilling explosives. It is therefore not surprising that a temperament to be rigorous in precisely attaining set limits, tolerances, and standards is critical for these pursuits. Also critical is a disposition to make independent judgments. When the work is of such a nature that decisions must be backed up by test information, measurements, or other proof, a temperament to be objective in evaluating against measurable, verifiable criteria is necessary. When the work requires that the worker make determinations on direct observation and individual interpretation of data, he must be valuative and amenable to evaluating against sensory or judgmental criteria. One type of situation puts a premium upon the attitude which demands demonstrable data as grounds for decision making; the other type on willingness to utilize personal sense impressions and expert knowledge, or simple to make value judgments when qualitative discriminations are necessary. Many jobs require both types of judgments; hence workers who are flexible in adjusting to either frame of reference.

The MACHINE TRADES AND CRAFTS are characterized by the fact that individual effort, knowledge, and self-reference predominate in relation to a definitely organized technique or process; and Working with Machines, Processes, and Techniques is a critical interest. In many of the trades and crafts there is a goal of achieving tangible products which involves interest in and constant awareness of what is being made, i.e., Tangible, Productive Satisfaction. This situation is more frequent in the Crafts. A Things and Objects interest is nearly always critical inasmuch as the jobs are things-centered and reasoning processes are largely concerned with dimensional and working properties of things.

INDUSTRIAL WORK - COORDINATIVE LEVEL

In COORDINATIVE levels of industrial work, the worker is required to coordinate his immediate perceptions and his bodily movements. The worker's "know-how" is derived from experience on the job itself rather than separate study of theory or methods. Computations, if any, are predetermined and routine. Decisions are generally based on immediately evident facts and circumstances.

Occupations in both the MACHINE TRADES and CRAFTS and COORDINATIVE WORK typically require alertness and facility in various forms of coordinated activity involving the hands, eyes, feet, and skeletal muscles in some combination. In COORDINATIVE WORK these abilities are the primary requirement. In the MACHINE TRADES and CRAFTS they are secondary to the worker's capacity to make decisions and to exercise independent judgment in a variety of tasks.

Various helper jobs or other aide jobs which provide opportunity for entry into COORDINATIVE WORK are on an ELEMENTAL level but persons with capacity to perform COORDINATIVE levels of work may take such jobs hoping to advance to higher levels. The worker functions of Operating-Controlling, Driving-Operating, and Manipulating, are frequently found in COORDINATIVE WORK.

INDUSTRIAL WORK - COORDINATIVE LEVEL

ILLUSTRATIVE TEMPERAMENT ROLES AND INTEREST INVOLVEMENTS

In COORDINATIVE work the worker's criteria for making decisions are frequently sensory (i.e., what he sees, hears, or otherwise perceives) and stem basically from things: machines, raw and manufactured materials, tools, objects of various kinds. Hence his interest orientation tends to be in the direction of Things and Objects rather than People and the Communication of Ideas. Since the methods and regulations which he follows are standardized and applied in well-routinized circumstances, a preference for Routine, Concrete Organized activities is critical.

Ability to Adapt to Repetitive Work is frequently critical to sustain attention to routine tasks. The ability to be rigorous may be equally critical. The worker may not be required to make complex adjustments to machines or to consider many variables in inspecting and testing, but he must adhere to rigidly prescribed tolerances and standards for the relatively (in contrast to TRADE AND CRAFT levels) limited operations which he does perform. The ability to adjust to receiving specific instructions is often critical in entry jobs. In jobs which involve watching possibly hazardous chemical reactions, or mixing potentially explosive ingredients, the worker is required to maintain presence of mind and not panic in emergencies. Self-control is critical in such jobs.

BASIC VOCATIONAL DIRECTION

PROCESSING WORK

Processing Crafts
Processing - Tending
Processing - Feeding - Offbearing and Handling

PROCESSING (GENERAL FIELD DESCRIPTION)

In PROCESSING, materials are extracted, refined, mixed, compounded, chemically or heat treated, or subjected to other reactions. On more complex levels the jobs require of workers extensive knowledge of a material and the complicated processes which may be involved in its manufacture. Workers in these jobs operate or control equipment such as mixing machines, extractors, cookers, vats, tanks, stills, ovens, kilns, furnaces, reactors, accelerators, etc., and take readings in such terms as pressures, temperatures, and weight and volume measures. They control panels, dials, oscilloscopes, and continuous graphs. The processing area of work is one of the most heavily automated with entire processes often accomplished by dialed in instructions to equipment. This affects many of the jobs.

On less complex levels, the people in PROCESSING do not require extensive knowledge of physical, chemical, or other nature of process with which they are working. The procedures are established and the worker is not required to vary or adapt them to meet specific conditions. A worker's decisions are based chiefly on immediate and simple sensory criteria and only routine formulas and chemical tests, if any, must be understood and used. Sensory acuity may be involved in making observations of such things as changes in color, textures or surfaces, odor, taste, or temperature, and in giving attention to continuous processes.

PROCESSING workers need an ability to withstand more than ordinary environmental discomfort such as: intense heat from furnaces, poisonous fumes from strong chemicals; splashing from quenching liquids or noxious odors from acids, fermenting solutions, etc. They are frequently required to wear protective clothing or equipment under these conditions and in jobs involving radiation hazards, as in atomic energy.

Some jobs are apprenticeable; others require some technical preparation; on-the-job training is frequent.

PROCESSING. Work, training, or leisure pursuits in which materials are treated, usually to alter their working or composition characteristics (in contrast to form-dimensional change which may occur but is incidental to the physical change which the substance being worked on undergoes).

Explore
D.O.T. OGA's: 500 Electroplating Occupations; 501 Dip Plating Occupations; 502 Melting, Pouring, Casting. and Related Occupations; 503 Pickling, Cleaning, Degreasing, and Related Occupations; 504 Heat-Treating Occupations; 505 Metal Spraying, Coating, and Related Occupations; 509 Occupations in Processing of Metal, n.e.c.;

510 Mixing and Related Occupations; 511 Separating, Filtering, and Related Occupations; 512 Melting Occupations; 513 Roasting Occupations; 514 Pouring and Casting Occupations; 515 Crushing and Grinding Occupations; 518 Molders, Coremakers, and Related Occupations; 519 Ore Refining and Foundry Occupations, n.e.c.;

520 Mixing, Compounding, Blending, Kneading, Shaping, and Related Occupations; 521 Separating, Crushing, Milling, Chopping, Grinding, and Related Occupations; 522 Culturing, Melting, Fermenting, Distilling, Saturating, Pickling, Aging, and Related Occupations; 523 Heating, Rendering, Melting, Drying, Cooling, Freezing, and Related Occupations; 524 Coating, Icing, Decorating, and Related Occupations; 525 Slaughtering, Breaking, Curing, and Related Occupations; 526 Cooking and Baking Occupations, n.e.c.; 529 Occupations in Processing of Food, Tobacco, and Related Products, n.e.c.;

530 Grinding, Beating, and Mixing Occupations; 532 Cooking and Drying Occupations; 533 Cooling, Bleaching, Screening, Washing, and Related Occupations; 534 Calendering, Sizing, Coating, and Related Occupations; 535 Forming Occupations, n.e.c.; 539 Occupations in Processing of Paper and Related Materials, n.e.c.;

540 Mixing and Blending Occupations; 541 Filtering, Straining, and Separating Occupations; 542 Distilling, Subliming, and Carbonizing Occupations; 543 Drying, Heating, and Melting Occupations; 544 Grinding and Crushing Occupations; 546 Reacting Occupations, n.e.c.;

550 Mixing and Blending Occupations; 551 Filtering, Straining, and Separating Occupations; 552 Distilling Occupations; 553 Heating, Baking, Drying, Seasoning, Melting, and Heat-Treating Occupations; 554 Coating, Calendering, Laminating, and Finishing Occupations; 555 Grinding and Crushing Occupations; 556 Casting and Molding Occupations, n.e.c.; 557 Extruding Occupations; 558 Reacting Occupations, n.e.c.; 559 Occupations in Processing of Chemicals, Plastics, Synthetics, Rubber, Paint, and Related Products, n.e.c.

D.O.T. OGA's (Continued): 560 Mixing and Related Occupations; 561 Wood Preserving and Related Occupations; 562 Saturating, Coating, and Related Occupations, n.e.c.; 563 Drying, Seasoning, and Related Occupations; 569 Occupations in Processing of Wood and Wood Products, n.e.c.;

570 Crushing, Grinding, and Mixing Occupations; 571 Separating Occupations; 572 Melting Occupations; 573 Baking, Drying, and Heat-Treating Occupations; 574 Impregnating, Coating, and Glazing Occupations; 575 Forming Occupations; 579 Occupations in Processing of Stone, Clay, Glass, and Related Products, n.e.c.;

580 Shaping, Blocking, Stretching, and Tentering Occupations; 581 Separating, Filtering, and Drying Occupations; 582 Washing, Steaming, and Saturating Occupations; 583 Ironing, Pressing, Glazing, Staking, Calendering, and Embossing Occupations; 584 Mercerizing, Coating, and Laminating Occupations; 585 Singeing, Cutting, Shearing, Shaving, and Napping Occupations; 586 Felting and Fulling Occupations; 587 Brushing and Shrinking Occupations; 589 Occupations in Processing of Leather, Textiles, and Related Products, n.e.c.;

590 Occupations in Processing Products from Assorted Materials; 599 Misc. Processing Occupations, n.e.c.;

914 Pumping and Pipeline Transportation Occupations;

953 Occupations in Production and Distribution of Gas; 954 Occupations in Filtration, Purification, and Distribution of Water; 955 Occupations in Disposal of Refuse and Sewage; 956 Occupations in Distribution of Steam

Related Career Possibilities: 361 Laundering Occupations; 362 Dry Cleaning Occupations; 364 Dyeing and Related Occupations;

900 Concrete-Mixing-Truck Drivers; 902 Dump-Truck Drivers; 903 Truck Drivers, Inflammables; 905 Truck Drivers, Heavy; 906 Truck Drivers, Light; 909 Motor Freight Occupations, n.e.c.; 910 Railroad Transportation Occupations; 911 Water Transportation Occupations; 912 Air Transportation Occupations; 913 Passenger Transportation Occupations, n.e.c.; 919 Misc. Transportation Occupations, n.e.c.; 920 Packaging Occupations; 921 Hoisting and Conveying Occupations; 922 Occupations in Moving and Storing Materials, n.e.c.; 929 Packaging and Materials Handling Occupations, n.e.c.; 930 Boring, Drilling, Cutting, and Related Occupations; 932 Loading and Conveying Operations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (PROCESSING CRAFTS)

PERTINENT INFORMATION (Special requirements, cultural and sociological data): PROCESSING CRAFTSMEN require: Capacity to acquire extensive knowledge of materials and the complicated processes which may be involved in their manufacture. Preference for production to laboratory environment. Unusual care and vigilance in performing duties. Capacity to learn and recall in proper order a complex sequence of steps in a process operation, spread attention over a number of contemporaneous processes, and be punctual in adhering to timetables. Frequently fine color discrimination to judge minute variations in color in chemically changing substances. Respect for scientific principles and ability to work with formulas and precision instruments. For many occupations, freedom from allergies and easy susceptibility to poisoning and/or rash. Often ability to withstand severe environmental discomfort, such as: intense heat from furnaces; poisonous fumes from cyanide baths or other strong chemicals; splashing from quenching liquids; or noxious odors from acids, fermenting solutions, etc. Persons whose strong aptitudes are form perception, spatial, motor coordination, finger dexterity, or manual dexterity in some combination may wish to explore processing occupations. Intelligence and numerical aptitude is required in many of the jobs. Clerical perception is utilized in many jobs which involve reading dials, measuring devices, and indicators of various kinds.

RELATED COURSES: Acid Mixing, Alcohol Distilling, Amalgamating, Annealing, Baking, Blast Furnace Tending, Bleaching, Brewing, Casting, Cheesemaking, Chemistry, Cleaning and Dyeing, Compounding, Dairy Processing, Dehydrating, Distilling, Dye Mixing, Electronics, Electroplating, Evaporating, Explosives, Filtering, Foundry Processes, Furnace Operating, General Science, Hardening, Heat Treating, Industrial Chemistry, Laundry Work, Manufacture of Organic Chemicals, Materials and Processes, Materials, Testing, Metallurgy, Milling (flour, feed, meal), Mineralogy, Oil and Gas Production, Ore Refining, Paper and Pulp Making, Pasteurizing, Petroleum Refining, Physics, Plating, Pumping, Reactor Controls and Purposes, Reactor Operating, Rubber Processing, Science, Soap Making, Solvents, Tanning, Tempering, Use of Radiation Detection Instruments, Vulcanizing, Wood Extracting, Wood Seasoning, Yeast Making.

RELATED LEISURE PURSUITS: Interest and activities related to production chemistry or other area of applied science. Working in school lab to anneal or electroplate objects with nickel, silver, gold, chromium, tin, brass, copper, etc. Having own chemistry set, lab, or workshop in which has experience testing chemical reactions with instruments, tending containers in which chemical reactions are taking place, and using extreme care in mixing or handling critically reacting ingredients. Experimenting with such chemical techniques as chromatography, distillation, precipitation with reagents, and crystallization. Reading scientific books and popular science magazines. Dyeing or cleaning clothes. Metal heating. Leather tanning. Making, cooking, or other food processing.

PROCESSING CRAFTS (Cont'd)

ILLUSTRATIVE TEMPERAMENT ROLES: Rigorous as in controlling atomic reactions, measuring chemical ingredients, reading instrument indicators, and following timetables, for example, in controlling a gas compressor, using extreme caution in manipulating numerous valves in proper sequence to avoid explosions or fires OR exercising very critical control of reaction time of chemicals to produce products meeting rigid specifications. Self-Controlled in that work often requires adherence to complicated safety regulations while working with critically reacting chemicals, inflammable gases, explosives, fissionable materials, or hot, rapidly congealing substances. Workers must be capable of instantly taking emergency steps necessary to maintain control of process in case of trouble--there is no latitude for "off-day" performance. In highly complex PROCESSING jobs, the worker makes independent judgments based on his knowledge of process. Some jobs require that judgments be made on the basis of data such as readings from thermometers, scales, and meters which indicate whether metals are hot enough, fluids sufficiently condensed, mixtures correctly proportioned, etc., and that quality control of product be maintained on the basis of titration, specific gravity, or other tests. In these situations the objectivity to base evaluations upon measurable, verifiable criteria is critical. In other jobs, quality control of product is maintained by a thorough knowledge of process aided by sensory observations and expert appraisal of the observations; hence evaluating against sensory or judgmental criteria is critical. Examples: A worker quenching a heated metal part on the basis of observing color and his knowledge of the meaning of minute color changes; blending cheese, testing by taste; deliming hides on basis of their appearance; checking equipment function by listening for vibrations, squeaks, or other sounds which indicate leaks or malfunction.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Working with Machines, Processes, Techniques in that most important aspect of worker's job is usually his knowledge of the properties of materials and the processes involved in their manufacture, as in distilling chemicals, refining petroleum, condensing gases, fermenting alcoholic beverages, aging cheese, dyeing fabrics, heat-treating metal, mixing explosives. Things and Objects in that worker is surrounded by a things-centered environment; his attention is continuously directed to the reactions of materials and the functioning of equipment. Scientific may be an interest in that work requires understanding of, and respect for, scientific principles of cause and effect in working from formulas and dealing with chemical and physical reactions of substances, in making reliable sensory observations, and in carrying out chemical and other scientifically established tests.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (PROCESSING - TENDING)

PERTINENT INFORMATION (Special requirements, cultural and sociological data): PROCESSING EQUIPMENT TENDING involves workers who tend processing equipment but are not required to have extensive knowledge of the physical, chemical, or other nature of the process. Their decisions are usually based on immediate and simple sensory criteria. They need the capacity for close attention to continuous processes - to detect irregularities in the operation of equipment or changes (sometimes barely perceptible) in materials and to react promptly and appropriately. For some jobs, elementary knowledge of chemistry and ability to follow simple chemical formulae. Frequently ability to attend to more than one thing at a time. Respect for sanitary regulations for food processing jobs. Often involved is a willingness to wear protective clothing and special tolerance for working conditions such as wet floors, noise, excessive humidity, vibrations, noxious odors, poisonous acids and fumes, and drastic temperature changes. Form perception, motor coordination, finger dexterity, and manual dexterity are frequent aptitudes. Numerical, spatial, and clerical are useful in some jobs.

RELATED COURSES: Consider same listings given for more complex levels. On-the-job training is usual method of preparation.

RELATED LEISURE PURSUITS: Consider same listings given for more complex levels of PROCESSING.

ILLUSTRATIVE TEMPERAMENT ROLES: Adaptable to Repetitive Work in adjusting to monotony of continuously watching equipment. Rigorous as in quenching metal forgings at exactly the right temperatures. Less frequently the following adjustments may be involved: Adaptable to Specific Instructions for helpers and entry workers who work under close supervision. Self-Controlled in maintaining attention and control of tasks as when quickly shuts off appropriate electric switches at signs of equipment malfunction OR when maintains complete concentration and steadiness as uses tongs and grapples to remove machine parts from hot cyanide bath. Valuative when making decisions on the basis of sensory criteria such as changes in color, pitch or loudness of sounds, textures of surfaces, rate of movement, odor, taste, or temperature. Objective in making decisions on the basis of simple tests, formulae, timetables, temperature and pressure specifications.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Things and Objects in continuous attention to reactions of materials and functioning of equipment. Routine, Concrete Organized in working with standardized formulae, timetables, or other established specifications. Working with Machines, Processes, and Techniques in that worker's concern is primarily with the functioning of equipment and the processing of materials.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS
(PROCESSING - FEEDING-OFFBEARING AND HANDLING)

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Workers are are engaged in feeding-offbearing or handling occupations in PROCESSING work have only limited knowledge of the "process" in which they are engaged and their decisions are based on immediate and simple sensory criteria. They may require muscular endurance, i.e., capacity for rapid and continuous muscular action. For some jobs elementary chemistry, ability to follow a simple chemical formula, and make simple chemical tests as titration and litmus paper. Sensory acuity in making observations of such things as changes in color, textures of surfaces, odor, taste, or temperature. Respect for sanitary regulations for food processing. On many jobs, tolerance for very disagreeable and at time offensive conditions as bloody slaughtering tables, revolting odors from fermentations and taints, or noxious fumes. Form perception, motor coordination, finger dexterity, and manual dexterity are useful aptitudes.

RELATED COURSES: Consider same listings given for more complex levels. On-the-job training is usual method of preparation.

RELATED LEISURE PURSUITS: Consider same listings given for more complex levels.

ILLUSTRATIVE TEMPERAMENT ROLES: Adaptable to constant repetition of the same operation, as the PAINT MIXER who continuously mixes pigments according to standard formula, OR the POULTRY KILLER who stands at a table performing over and over the same operation of bending back chickens' heads and severing windpipes with knife. Rigorous as in slaughtering operations when the TURKEY KILLER opens turkey's mouth with fingers and forces point of knife through roof of mouth into brain to paralyze bird and prevent flopping OR the KOSHER CUTTER who in killing beef according to the kosher method must make a very swift and precise cut across the animal's throat in order that it suffer no pain. Self-Controlled when working with processes which produce poisonous fumes (such as cyanide baths) in which must maintain absolute concentration and not miscalculate what is doing. Adaptable to Specific Instructions for many of the jobs which are closely supervised. Objective for jobs which involve checking against simple tests. Valuative in observing and detecting barely perceptible changes in reacting substances and deciding on the basis of personal experience the next move to take OR by sense of smell determining state of fermentation in food products processing.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Routine, Concrete Organized in that work is carried out under established procedures. Things and Objects in all-day concentration upon the materials, objects, and equipment.

BASIC VOCATIONAL DIRECTION

MACHINE WORK

Machining
Production Machine Operating, n.e.c.
Vehicle Driving
Heavy Vehicle Operating

MACHINE WORK, N.E.C. (GENERAL FIELD DESCRIPTION)

The use of machines is ubiquitous throughout the world of work and no one area of work can properly be identified as "machine work." Therefore, some types of MACHINE WORK are treated here and others are not. A rough criterion relates to whether or not the worker is specifically identified with the machine he operates.

Some of the kinds of machine-associated activities which are in other broad fields are as follows: First, there are the mechanics and electricians who are involved with machines, but who are separated from MACHINE WORK, N.E.C., because of the heavy loading of "trouble-shooting" in their work. Second, there are bench and structural craftsmen who use power machines as an adjunct to their hand and small tool skills. Their skill in producing a product includes the use of various tools and machines and they establish the tempo at which they will use their machine aids rather than adjusting their work rhythm to that of the machine. Other bench workers perform their work at machine conveyors and are paced by the machine, but the tasks they perform do not require them to actually relate to a machine except as it controls their work speed. Third, there are machines and equipment whose function is to process materials in such a way that a composition change takes place. Although the workers associated with these machines operate or tend them, their knowledge of process is more important than their knowledge of the machines. Fourth, there are the machines which are involved in the composing of type (typesetting) and printing of impressions on paper or other materials. These are in Graphic Arts. Fifth, there are machines which perform primarily clerical tasks of computing, sorting, collating, and other forms of data-processing, either mechanically or electronically. These are in either Clerical work or Graphic Arts. Sixth, there are machines and mechanical equipment which are so complex that work with them is considered to be engineering or related technical control, e.g., planes, ships, cyclotrons, rocket launchers.

Throughout all areas of work in which machines are involved, automation and cybernation may be affecting the nature of occupations so that the worker's relationships to the machines may be undergoing change. In some areas nearly all machines have been affected; in others there is little change. A machine which involved a worker in the manipulation of numerous controls to fabricate a product according to a complicated diagram may be replaced in function by automated machinery which is controlled by dialed-in instructions. Work orders may be fed into a machine by numbers which are punched onto tapes or cards that are inserted into electronic or mechanical devices which translate numbers into motions or actions. The man-machine relationship may shift from the traditional one to one which is essentially clerical or technical. On the other hand, it may shift from that of the skilled machine operator or set-up man to simply that of a machine watcher who functions in a passive sense, observing the equipment and calling his supervisor if anything unusual happens.

The machine operations which are included here include (1) large powered machines that the worker uses as tools to handle, manipulate, and machine stock so that a form-dimensional change takes place, i.e., machining; (2) machines or machine-related equipment whose function is to transport or hoist objects, materials, or passengers and which involve their operators chiefly in the control of motion and (3) the large array of fabricating machines which are employed in the mass production of goods and products such as topcoats and toys, television sets and tractors, lawnmowers and light bulbs, automobiles and appliances, bracelets and bunting.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

PERTINENT INFORMATION (Special requirements, cultural and sociological data): MACHINE WORK is a term that is ambiguous in assaying what machines demand of their operators. This requires some understanding of the nature of machines and the differences among them. Moreover, the usages to which machines are put may demand very different abilities, knowledges, and work setting orientations. There is a vast difference, for instance in understanding the workings of an ordinary desk stapling machine and that of a complicated textile machine containing more than one hundred thousand working parts, or a jet airliner with controls consisting of a galaxy of knobs, dials, and switches.

The demands made by the machine upon the worker vary greatly on the basis of how the worker relates to the machine. When his function is to set up the machine to prepare it for a special function or to diagnose the cause of its faulty operation, he must understand the functional nature of parts and what needs to be done with, or to them, to put the machine into faultless operation. However, suppose he must understand the capabilities of the machine to turn out from a blank or raw piece of material, a product which corresponds to blueprints, patterns, or other specifications; in this case, he deals with the machine in quite a different way. For complex machine work jobs, the worker requires capacity to reason in terms of mechanical and mathematical principles; for less complex levels the most critical requirements are ability to give close and sustained attention to routine situations or strength and stamina to adjust to continuous muscular action in repetitive manual machine tasks. The physical aptitudes of Motor Coordination, Manual and Finger Dexterity are useful in machine work, and also Intelligence, Numerical, Spatial and Form Perception in many of the jobs.

RELATED COURSES: Shop and arithmetic most widely applicable. Driving, heavy equipment operating, machine operating courses of any kind, machine shop, sewing machine operating. Preparation ranges from on-the-job through technical and apprenticeship. Military experience is often qualifying.

RELATED LEISURE PURSUITS: Habits in everyday life of observing machines in operation to see how they function. Liking to try out machines. Good driving record. Liking to visit factories, shops, and other places where machines are. Operating saws, looms, punch presses, or other machines in high school or shop course. Having a home workshop. Modelmaking. Summer job working around construction machines. Skill in operating household equipment of any kind. Tinkering with automobile. Repairing household appliances.

ILLUSTRATIVE TEMPERAMENT ROLES: Objective, particularly on complex levels, as the machine operator who has the responsibility for seeing that the parts produced by his machine are shaped within specified tolerances so that they are interchangeable. Rigorous as in accurate manipulation of controls of charging machine which picks up ladles of molten iron and pours into containers. For less exacting levels Adaptability to Repetitive Work is important, as in standing all day observing a machine as it turns out thousands of uniform items. Some machine workers must be Gregarious to adapt to group situations or public contact functions in driving occupations.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Things and Objects to adjust to a mechanized environment as that of a very large plant, filled with row on row of ceiling high machines. Machines, Processes, and Techniques as in operating giant presses which concentrate several tons of force to form metal objects. Tangible, Productive Satisfaction is often involved, as in "machining" an object to obtain certain surface quality or precise dimension.

MACHINING. Work, training, and leisure pursuits involving the use of precision machine shop equipment to remove excess material from stock.

Explore D.O.T. OGA's: 60 Metal Machining Occupations; 66 Wood Machining Occupations; 67 Occupations in Machining Stone, Clay, Glass and Related Materials

Related Career Possibilities: 017 Draftsmen, n.e.c.; 62 and 63 Mechanics and Machinery Repairmen

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: The machinist apprenticeship is an old traditional one and it is the most common means of entry into the machining field. However, some machinists become journeymen by on-the-job training, and machine tool operators most often qualify in this manner. High school graduation is the usual requirement. Valuable high school courses are in the area of shop and mathematics.

Courses: Blueprint Reading, Boring Machines, Drilling Machines, Furniture Machines, General Machines, Instrument Making, Lathes, Lens Grinding, Machine Shop, Machine Tools, Mechanical Drawing, Milling Machines, Optics, Physics-Mechanics, Planers, Power Machines, Presswork, Shaper Operating, Shop Mathematics, Shop Work, Stone Working Machines, Tool and Die Making, Woodworking Machines.

RELATED LEISURE PURSUITS: Habit of observing and experimenting with mechanical devices. Having a home workshop. Building scale metal or wooden models - ships, planes, automobiles, trains, etc. Toy making. Grinding own telescope lens and making mount. Furniture making. Metal working. Art metalwork. Woodcraft. Solving arithmetic and geometry problems. Making and reading blueprints.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Machining is accomplished by the use of machine tools. Machine tools are power-driven machines which hold both the piece of stock to be shaped and a cutting instrument, i.e., "tool," and brings them together so that the metal is cut, shaved, ground, drilled, etc. The most common kinds of machine tools are engine lathes, turret lathes, grinding machines, screw machines, milling machines, drill presses, boring mills, planers, and shapers. A "machine shop" is a work-place where machine tools are used. A machine shop which makes a large quantity of identical items is known as a production shop. A machine shop which makes a wide variety of products is known as a job shop. Workers in machining range from those who can perform complex and varied machining operations, requiring the use of several different kinds of machine tools, to those who use one type of machine to perform a repetitive operation. The use of tape-controlled machines is becoming widespread, and results in machine tool operations which are automatic in contrast to the complicated setup operations which have been characteristic of machining jobs. Machining jobs range from helper levels (which at times are training ground for complex machining jobs) through the machine tool operator who performs repetitive operations to the all-around machinist, expert in many types of equipment. These jobs may lead to higher levels such as setup men, layout men, tool and die makers, tool designers, instrument makers, and inspectors. The machine shop environment is noisy.

Specific knowledges and abilities: For all-around jobs, ability to plan and apply mechanical processes to accomplish specific results. Understanding of geometric specifications and linear scale readings. Ability to make and interpret measurements, using vernier scale, guages, micrometers, calipers, etc. Good judgment of speed, position, and size. Working properties of various materials. Touch discrimination. Adaptability to working in a fixed location, usually standing. Ability to understand the functional nature of machines and to visualize how a part will function by observation of it. Ability to read complicated blueprints and to follow detailed specifications. Respect for tools and equipment. Accuracy: precision workmanship. Spatial perception.

ILLUSTRATIVE TEMPERAMENT ROLES: Rigorous in that work requires extreme care and constant attention, being at times of such refined dimensions that a mistake of 10 millionths of an inch would ruin the part being machined. Objective in working with design specifications and measurements to determine and control the nature of the work process. Versatile for the all-around machinist who must learn the operation of various machine tools, including specialized tools developed from basic tools, in order to machine many different kinds of articles and parts. HELPERS must adjust to working under specific instructions. MACHINE TOOL OPERATORS who use a single machine to mass product a single item require adaptability to repetitive work.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Tangible, Productive Satisfaction in carrying through to completion the construction and repair of all kinds of parts, tools, and machines. Working with Machines, Processes, and Techniques in that worker is pretty much "on his own" in relation to machines and techniques. Self-reference predominates in his planning own work on the basis of blueprints, models, etc. How he functions on his job depends primarily on his skill with specialized machines and mastery of machining methods. Things and Objects in that attention is things-centered: on working properties of materials such as copper, stone, glass, iron aluminum, and various steels and on objects such as parts for engines, scientific and other instruments, guns, turbines, motors, etc. Routine, Concrete Organized for HELPERS and MACHINE TOOL OPERATORS using a single machine to mass product items.

PRODUCTION MACHINE OPERATING, n.e.c. Work, training, and leisure pursuits in which the worker operates and frequently sets up production machines. These machines usually contain numerous working parts.

Explore
D.O.T. OGA's: 610 Hammer Forging Occupations; 611 Press Forging Occupations; 612 Forging Occupations, n.e.c.; 613 Sheet and Bar Rolling Occupations; 614 Extruding and Drawing Occupations; 615 Punching and Shearing Occupations; 616 Fabricating Machine Occupations; 617 Forming Occupations, n.e.c.; 619 Misc. Metalworking Occupations, n.e.c.;

640 Paper Cutting, Winding, and Related Occupations; 641 Folding, Creasing, Scoring, and Gluing Occupations; 642 Paper Sewing Occupations; 643 Corrugating Occupations; 644 Fastening Occupations; 649 Paperworking Occupations, n.e.c.;

680 Carding, Combing, Drawing, and Related Occupations; 681 Twisting, Beaming, Warping, and Related Occupations; 682 Spinning Occupations; 683 Weavers and Related Occupations; 684 Hosiery Knitting Occupations; 685 Knitting Occupations, Except Hosiery; 686 Punching, Cutting, Forming, and Related Occupations; 689 Textile Occupations, n.e.c.;

690 Plastics, Synthetics, Rubber, and Leather Working Occupations; 691 Occupations in Fabrication of Insulated Wire and Cable; 692 Occupations in Fabrication of Products from Assorted Materials; 693 Modelmakers, Patternmakers, and Related Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: As people in higher technical and supervisory levels of production machine operating are usually drawn from the ranks, high school graduation is regarded as desirable for the jobs and high school courses such as English, History, General Science, General Mathematics, Economics, Speech, Shop, and Mechanical Drawing are an advantage in terms of general background. The jobs are usually learned by on-the-job training, although textile schools offer training in textiles, and some apprenticeships and special training courses are available for Drop-Hammer Operating, Extruding, Forging, Hammersmithing, Hot-Mill Operating, Press Forming, and other specific production jobs.

RELATED LEISURE PURSUITS: Habit in everyday life of studying machines in operation to see how they function. Operating a saw, loom, punch press, or other machine in high school or shop course. Visiting factories, shops, or other places where things are being made. Driving an automobile, truck, or tractor.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): It is characteristic of production workers that they adjust to a fixed position location, to working in a mechanized environment, and to adjusting their work rhythm to the tempo established by a machine. Workers may be required to spread attention over one or more frequently large machines which may contain as many as 30 units and 100,000 working parts and quickly spot signs of disorder. Other capacities: Accuracy in judging speed, weight, velocity, and motion generally. Quickness in starting, stopping, and controlling machines. Facility in learning and recalling in proper order a complex series of machine operations. Faithfulness in following safety regulations. An attitude of respect for the proper care of machines. Production is often carried on as a group effort and the worker must adjust to being a member of a team, perhaps even to seeing himself as "a cog in the wheel." Mechanical, spatial, form perception, motor coordination, manual and finger dexterity are useful aptitudes.

ILLUSTRATIVE TEMPERAMENT ROLES: Rigorous in paying close attention to product to insure its quality, such as hosiery that is flawless or yarns woven into fabrics true to design AND in unerring control of machine so that it functions properly, as the ROLLING MILL OPERATOR throwing correct electric switches according to signal in starting and stopping various motors. Objective as FORGING-PRESS OPERATOR who after pulling lever to lower ram that compresses metal to shape of die impressions, verifies dimensions, using gage or scale.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Working with Machines, Process, Techniques as in spreading attention over various details of large machines, as lights, dials, switches, buttons, levers, handles, cranks, and the like, as the worker regulates the machine for various purposes AND as in understanding the particular technique, such as extruding metal, spinning yarn, weaving plush, drawing wire, etc. Things and Objects in that attention is constantly directed to the functioning of machines and fabrication of products, objects, or materials. Tangible, Productive Satisfaction is variable. It is involved in situations such as setting up and alining dies in a punch press to form or squeeze parts into shape or size AND in operating a loom to produce woven cloth of intricate design.

VEHICULAR MACHINE OPERATING. Work, training, and leisure pursuits which involve the operation and control of machines that serve primarily a conveying or transporting function, rather than performing an operation on, materials or objects. On more complex levels the machines involve numerous controls and the skilled worker may be required to know the operation of several of the machines (e.g., pile drivers, power shovels, cranes). On less complex levels, the worker may be required to know the operation of only one comparatively simple machine. In operating these machines, the workers are involved primarily in the control of motion. This may be done by manipulation of levers, pedals, or the fingering of dials, instruments and other controls, and frequently involving both hand and foot controls. The worker must possess highly developed capacity to make judgments based on fine interpretations of sensory cues stemming from such factors as inertia, speed, weight, and often centrifugal and centripetal force. He must understand the capacities and performance of vehicular machines in motion. He must be attentive, have rapid reaction time, good eye-hand, and frequently eye-hand-foot, coordination. VEHICULAR MACHINE OPERATING is subdivided into (1) Heavy Vehicle Operating and (2) Vehicle Driving.

Explore
D.O.T. OGA's: In the following OGA's, explore those occupations with 3 (WF Driving-Controlling) as the sixth place digit.

359 Misc. Personal Service Occupations, n.e.c.; 389 Building and Related Service Occupations, n.e.c.;

424 Farm Machinery Operators, n.e.c.;

569 Occupations in Processing of Wood and Wood Products, n.e.c.; 570 Crushing, Grinding, and Mixing Occupations; 575 Forming Occupations;

850 Excavating, Grading, and Related Occupations; 851 Drainage and Related Occupations; 852 Concrete Paving Occupations; 853 Asphalt Paving Occupations; 859 Excavating Grading, Paving, and Related Occupations, n.e.c.; 869 Misc. Construction Occupations, n.e.c.; 892 Hoisting and Conveying Occupations, n.e.c.;

900 Concrete-Mixing-Truck Drivers; 902 Dump-Truck Drivers; 903 Truck Drivers, Inflammables; 904 Trailer-Truck Drivers; 905 Truck Drivers, Heavy; 906 Truck Drivers, Light; 909 Motor Freight Occupations, n.e.c.; 910 Railroad Transportation Occupations; 913 Passenger Transportation Occupations, n.e.c.; 915 Attendants and Servicemen, Parking Lots and Service Facilities; 919 Misc. Transportation Occupations, n.e.c.; 921 Hoisting and Conveying Occupations; 922 Occupations in Moving and Storing Materials, n.e.c.; 929 Packaging and Materials Handling Occupations, n.e.c.; 930 Boring, Drilling, Cutting, and Related Occupations; 932 Loading and Conveying Occupations

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (HEAVY VEHICLE OPERATING)

PERTINENT INFORMATION (Special requirements, cultural and sociological data): HEAVY VEHICLE OPERATING includes the operation of hoisting and charging machines such as hot-metal cranes, furnace chargers, power shovels, bulldozers, scrapers, and pile drivers, cranes, derricks, hoists, cement mixers, and paving machines. Few types of occupations which the worker may choose are more "physical" than these - less involved with data in the form of work orders, tables, blueprints, charts, or mathematical formulae. The worker is directed in his work chiefly by his own keen judgments in evaluating sensory cues. Signaling is a major form of communication in the work. Literacy requirements are not specific. It is pointed out by training schools that they can train illiterates to do many of the jobs, if the people have the capacity to acquire the high level of physical skills required. However, apprenticeships exist for many of the jobs. In complex levels of the work, the worker uses the machines almost as if they were extensions of his arms and legs and he must develop very fine coordinations to handle the machines in this way. In the heavy construction occupations the rugged outdoor type of person is likely to be happy. He will like the outdoors and being "on the move" to many different construction sites. Many jobs are very tiring because the constant movement of the machine shakes or jolts the operator. However, the craneman, for example, who pours molten metal in a steel plant, although utilizing many of the same aptitudes, is very different in that his work is in a fixed location in a factory, and he must adjust to a mechanized environment.

ILLUSTRATIVE TEMPERAMENT ROLES: Versatile for all-around journeymen in the field who operate several machines. The less skilled worker who operates a single machine may need to Adapt to Repetitive Work. Self-Controlled in that an instant of indecision can wreck a machine and kill the operator or others. Valuative in the large number of judgments which must be made, not guided by charts, tables, or formulae, but on the basis of the worker's experience which has developed in him a "feel" for the equipment and its performance. Examples: consideration of weight of material being lifted and how much it is affected by moisture content; consideration of how much the lifting capacity of a crane's boom is affected by the slope of the terrain on which it is parked. Objective in unwavering adherence to established safety regulations. Rigorous in timing: there is only one "right time" for the worker's actions, no leeway for being a fraction of a second too late or too early.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Things and Objects in that worker's attention is directed chiefly at things and objects, e.g., the craneman controlling the transfer of 30 tons of molten steel. Working with Machines, Processes, Techniques as the CRANE OPERATOR manipulating buckets for digging; pile drivers for driving steel beams, wood, and concrete piling into the ground; and wrecking balls for demolition work. For construction machine operators: Outdoor Interest and Tangible, Productive Satisfaction in literally seeing the face of the earth change as a result of work: in cutting down mountains and leveling valleys, changing the course of rivers, and forming never-ending ribbons of highways.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (VEHICLE DRIVING)

PERTINENT INFORMATION (Special requirements, cultural and sociological data): VEHICLE DRIVING includes the operation of automobiles, trucks, and trailer trucks to move passengers and goods over the highways and city streets. The duties of many drivers are more or less restricted to the operation of their equipment, such as diesel-power tractor-trailers, which are large and expensive. Others, however, are essentially public contact people with skill in operating equipment no more important than personality factors.

Good driving ability is a common requirement of the jobs and the top professional drivers are to be found in the more responsible jobs. Responsibility is the most important personal quality required of drivers. They must adhere strictly to safety regulations and traffic laws and deliver passengers and freight safely. They are on their own for most of the time and enjoy freedom from close supervision. Many jobs such as routemen, are combination salesmen and drivers. Taxi cab operators, whose financial renumeration is derived partially from tips, share the work culture of service occupations. Drivers of big trucks and tractor-trailers and buses must have a high degree of skill to maneuver their vehicles in tight parking places, or narrow alleys, and to drive safely andmake time schedules on heavily traveled highways. Such drivers must be able to adapt to night schedules. Business contact is part of the bus driver's job. Most drivers have a certain amount of record keeping and computing to do. For many types of heavy truck and bus driving, companies often give tests for such abilities as sharpness and field of vision, reaction time, ability to judge speed, and emotional stability. All drivers must be familiar with traffic laws and safety regulations, be able to judge distance accurately; have good foot, hand, and eye coordination; and have quick reflexes. Neat, well-groomed appearance is desirable, and the ability to deal tactful and courteously with all types of people for driving which involves public contact.

RELATED COURSE AREAS: Literacy requirements vary. High school graduation is required for some types of driving jobs; for others it is not. Courses: Diesel Operating, Driver Training, Automobile Mechanics. For driving which involves considerable public contact, keeping of records, and selling, courses such as: salesmanship, public speaking, bookkeeping and business arithmetic, and school-work programs in retail and wholesale merchandising.

RELATED LEISURE PURSUITS: Interest in engines, cars, car mechanics, and evidence of responsible and skilled driving habits most important.

ILLUSTRATIVE TEMPERAMENT ROLES: Self-Controlled as the TRAILER-TRUCK DRIVER who may at any time encounter one or more of a variety of emergencies requiring quick and collected thinking OR the inter-city BUS DRIVER who is subjected to considerable tension as he adheres to rigid timetables and operates large vehicles in heavy and rapidly moving traffic. Rigorous in observing correct driving practices. Objective in adhering to schedules and timetables. Valuative in making judgments in regard to such matters as having disorderly passengers removed from bus and in choosing a course of action according to own personal judgment when faced with dangerous conditions such as slick roads, traffic jams, or malfunctioning of equipment. Gregarious for those drivers who must deal with people as the local transit operator who must take all kinds of personalities in stride: complainers, the handicapped requiring special attention, children traveling alone, etc., and jostling hostile crowds. Influencing for the ROUTEMAN who must induce people to buy, requiring of him self-confidence, pleasant voice, and ability to speak well. For TAXI DRIVERS adapting to specific instructions in assisting people in various ways. Adaptable to Working Alone, In Isolation for the over-the-road driver who must spend many hours at the wheel, with no one to speak to, alone with his thoughts and the road.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Working with Machines, Processes, Techniques to be interested in vehicles and their operation. Business Contact as the BUS DRIVER representing his company in dealing with passengers, exhibiting courtesy and tact so that passengers will continue to patronize bus line.

BASIC VOCATIONAL DIRECTION

BENCH WORK

Bench Craftsmen
Bench Work, Production Assembling and Related
Bench Inspecting and Related

BENCH WORK (GENERAL FIELD DESCRIPTION)

BENCH WORK involves activities in which the worker is engaged in hand work with relatively small parts, objects, and materials, or with associated inspectional activities. Extensive hand movements characterize most of the activities associated with bench work, but in inspectional activities the emphasis is upon sensitivity to visual, auditory, tactile, and other stimuli. Persons with a preference for industrial pursuits that are relatively sedentary and passive in nature (as compared with highly active jobs such as occur in Structural Work, for example) may find suitable jobs here.

The workers often work in a fixed location in a mill or shop area, and at a bench, work table, or conveyor. They frequently use bench power tools and may operate one or several large stationary machines as an adjunct to the hand skills. At the more complex levels workers follow patterns, diagrams, or other exacting specifications, use a variety of hand tools, and assume responsibility for meeting standards. Workers on the less complex levels are required to follow standardized procedures.

These workers tend to be characterized by an attitude of carefulness and respect for tools, equipment, and materials. For many of the jobs the worker needs a sense of color, form, and proportion to achieve finished appearances in accordance with craft standards. For some, tactual sensitivity to handle delicate parts or judge smoothness, roughness, contour or other surface qualities of objects. On the more routine levels of the work, there is often required adaptability to maintaining a tight time schedule all day in order not to hold up an assembly line.

Jobs of a bench work nature vary considerably in nature of training. Many are apprenticeable. Others require training in a technical or trade school. Many are of the type which the worker learns by beginning as a helper or routine worker from which he works himself to craft level status. On the lower levels, many bench work type jobs do not lead to a higher level at all, and the worker may not look forward to a promotion line which will bring him to craft status.

BENCH. Work, training, and leisure pursuits in which relatively small parts and materials are assembled, fitted, ground, carved, molded, formed, modeled, repaired, or inspected, usually at a bench, worktable, conveyor, or other fixed position location. Includes instrument repair.

Explore
D.O.T. OGA's: 660 Cabinetmakers; 661 Patternmakers;

700 Occupations in Fabrication, Assembly, and Repair of Jewelry, Silverware, and Related Products; 701 Fabrication, Assembly, and Repair of Tools, and Related Products; 703 Assembly and Repair of Sheet-metal Products, n.e.c.; 705 Filing, Grinding, Buffing, Cleaning, and Polishing Occupations, n.e.c.; 706 Metal Unit Assemblers and Adjusters, n.e.c.; 709 Misc. Occupations in Fabrication, Assembly, and Repair of Metal Products, n.e.c.;

710 Fabrication and Repair of Instruments for Measuring, Controlling, and Indicating Physical Characteristics; 711 Fabrication and Repair of Optical Instruments and Lenses; 712 Fabrication and Repair of Surgical, Medical, and Dental Instruments and Supplies; 713 Fabrication and Repair of Ophthalmic Goods; 714 Fabrication and Repair of Photographic Equipment and Supplies; 715 Fabrication and Repair of Watches, Clocks, and Parts; 719 Fabrication and Repair of Scientific and Medical Apparatus, Photographic and Optical Goods, Watches and Clocks, and Related Products, n.e.c.;

730 Fabrication and Repair of Musical Instruments and Parts; 731 Fabrication and Repair of Games and Toys; 732 Fabrication and Repair of Sporting Goods; 733 Fabrication and Repair of Pens, Pencils, and Office and Artists' Materials, n.e.c.; 734 Fabrication and Repair of Notions; 735 Fabrication and Repair of Jewelry, n.e.c.; 736 Fabrication and Repair of Ordnance and Accessories; 739 Fabrication and Repair of Products Made from Assorted Materials, n.e.c.;

740 Painters, Brush; 741 Painters, Spray; 742 Staining, Waxing, and Related Occupations; 749 Painting, Decorating, and Related Occupations, n.e.c.;

750 Occupations in Fabrication and Repair of Tires, Tubes, Tire Treads, and Related Products; 751 Laying Out and Cutting Occupations, n.e.c.; 753 Fabrication and Repair of Rubber and Plastic Footwear; 754 Fabrication and Repair of Misc. Plastics Products; 759 Fabrication and Repair of Plastics, Synthetics, Rubber, and Related Products, n.e.c.;

760 Bench Carpenters and Related Occupations; 761 Occupations in Laying Out, Cutting, Carving, Shaping, and Sanding Wood Products, n.e.c.; 762 Occupations in Assembling Wood Products, n.e.c.; 763 Fabrication and Repair of Furniture, n.e.c.; 764 Cooperage Occupations; 769 Fabrication and Repair of Wood Products, n.e.c.

D.O.T. OGA's (Continued): 770 Occupations in Fabrication and Repair of Jewelry, Ornaments, and Related Products; 771 Stone Cutters and Carvers; 772 Glass Blowing, Pressing, Shaping, and Related Occupations, n.e.c.; 773 Occupations in Coloring and Decorating Brick, Tile, and Related Products; 774 Fabrication and Repair of Pottery and Porcelain Ware; 775 Grinding, Filing, Polishing, Frosting, Etching, Cleaning, and Related Occupations, n.e.c.; 776 Fabrication and Repair of Asbestos and Polishing Products, Abrasives, and Related Materials; 777 Modelmakers, Patternmakers, Moldmakers, and Related Occupations; 779 Fabrication and Repair of Sand, Stone, Clay, and Glass Products, n.e.c.;

780 Occupations in Upholstering and in Fabrication and Repair of Mattresses, and Bedsprings; 781 Laying Out, Marking, Cutting, and Punching Occupations, n.e.c.; 782 Hand Sewers, Menders, Embroiders, Knitters, and Related Occupations, n.e.c.; 783 Fur Working Occupations; 784 Fabrication and Repair of Hats, Caps, Gloves, and Related Products; 785 Tailors and Dressmakers; 786 Sewing Machine Operators, Garment; 787 Sewing Machine Operators, Nongarment; 788 Fabrication and Repair of Footwear; 789 Fabrication and Repair of Textile, Leather, and Related Products, n.e.c.;

790 Occupations in Preparation of Food, Tobacco, and Related Products, n.e.c.; 794 Fabrication of Paper Products, n.e.c.; 799 Misc. Bench Work Occupations, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (BENCH CRAFTSMEN)

PERTINENT INFORMATION (Special requirements, cultural and sociological data): BENCH CRAFTSMEN are characterized by their knowledge of their craft and their skill in using hands, hand tools, and equipment. The most ancient artisans might be thought of as the predecessors of modern bench craftsmen. However, the inroad of automation has drastically altered the nature of many bench occupations. Instructions which came by blueprints and diagrams to the worker may now be in the form of color slides, tape recordings, or electronic communications of various kinds. In these crafts, some workers perform jobs which involve a sense of form and precision in hand work, requiring of them good eyesight, a steady hand, patience, and close attention to detail. Unusual finger dexterity may be required in assembling, shaping, or inspecting small parts. Some tiny components are often hand-assembled under power microscopes; miniaturization may be of an order so that the assembly will pass through the eye of a needle. Precision assemblies and mechanisms may be required to operate within clearances measured by thousandths of an inch. Such assembly may take place on a production line within tight, unvarying time schedules which are measured by units of one-hundredths of a minute. On the other hand, the fine work may be of a very different nature, performed at the worker's own pace, to achieve, for example, a "custom made" fur garment. In this case the worker has the experience and knowledge to complete his work from beginning to end. He is likely to have a passion for artistic workmanship and the capacity for tremendous care and sustained attention to the details of a single work over a long period of time.

Fine work of the nature just described requires some of the following: Tactual sensitivity to handle delicate parts or judge smoothness, roughness, contour or other surface qualities of objects. Sense of color, form, and proportion to achieve finished appearances in accordance with artistic standards. Attitude of great carefulness and respect for tools, equipment, and materials. Ability to master a complex of physical skills to acquire expert knowledge of the working properties of materials. Intelligence, numerical aptitude, spatial aptitude, form perception, motor coordination, finger dexterity, and manual dexterity in some combination are useful aptitudes.

RELATED COURSES: Mathematics, physics, electronics, chemistry, blueprint reading, and shop work in high school. Aircraft Inspecting, Applied Art, Art Metal, Artificial Flower Making, Basketry, Bead Work, Blacksmithing, Bookbinding, Broom Making, Cabinetmaking, Carving Ivory or Bone, Carving Plastics, Ceramics, Chair Caning, Cooperage, Coppersmithing, Coremaking, Dental Mechanics, Dressmaking, Feathercraft, Forging, Foundry Practice, Fruit Wax Molding, Fur Cutting, Fur Tailoring, Furniture Craft, Furniture Finishing, Furniture Reconditioning, Garment and Needlework, Glass Blowing, Glove Making, Goldbeating, Goldsmithing, Gun Belt Making, Hand Crafts, Hand Knitting, Hand Weaving, Industrial Arts, Inspecting and Testing, Instrument Making, Jewelry Making, Lacemaking, Lapidary Work, Leathercraft, Leather Tooling, Leather Working, Lens Grinding and Polishing, Machine Inspecting, Marquetry Work, Meat Cutting, Metal Work, Millinery, Model Airplanes, Model Boats, Model Furniture, Model Houses, Modelmaking, Novelty Making, Optical Mechanics, Optics, Ornamental Iron Work, Painting, Papier-Mache Molding, Patternmaking, Pewter Work, Plastic Turning, Raffia Work, Rug Making, Sailmaking, Sewing, Sheet Metal Layout, Sheet Metal Work, Silversmithing, Stone Sculpture, Stone Work, Tailoring, Taxidermy, Telescope Making, Testing and Inspecting, Template Making, Tire Building, Tool Dressing, Toy Making, Upholstering, Watch and Clock Repairing, Wheelwrighting, Wood Block Cutting, Wood Novelties, Wood Sculpture, Woodworking, Wrought Iron Work.

BENCH CRAFTSMEN (Cont'd)

RELATED LEISURE PURSUITS: Finger dexterity as shown in hobbies such as leathercraft, wood carving, wood burning, clay modeling, etc., which have involved the use of small hand tools. Repairing watches, clocks, cameras, binoculars. Tooling leather objects such as billfolds, belts, or bookcovers. Painting furniture. Heating, riveting, and soldering metal to make rings, desk sets, etc. Doing needlework, embroidery, patchwork, or applique. Carving pot hooks, forks, spoons, letter openers, etc. Making objects from sheet metal. Stuffing and mounting birds, foxes, or other animals. Sewing, altering, or repairing clothes. Constructing cabinets for TV or radio. Using coins or other odds and ends to make bracelets and trinkets. Making totem poles, doll houses, model theaters, and the like. Grinding telescope lenses. Upholstering chairs, stools, or settees. Mounting and framing pictures. Converting bottles into lamps and making lampshades. Building birdboxes. Making hooked rugs. Modeling in sand, papier mache, wax, or other material. Exhibiting in Arts and Crafts Fairs.

ILLUSTRATIVE TEMPERAMENT ROLES: Rigorous in adhering to microscopic dimensions in scientific instrument making; cutting cloth to exact patterns; drawing layouts to scale; maintaining engineering specifications in adjusting highly sensitive measuring devices; OR reweaving damaged areas of oriental rugs, exactly duplicating original design. Valuative as the VIOLIN MAKER adjusting the instrument by aurally judging tonal quality; the MARQUETRY WORKER inlaying ornamental woods of different tints to form decorative designs; the TAXIDERMIST achieving lifelikeness in stuffed animals; the GENUINE PEARL WORKER deciding for each individual pearl the exact amount of peeling - decisions made on the basis of cultivated value judgments rather than measurable specifications. Objective as in tuning musical instruments by checking with tuning fork OR altering dimensions of castings after comparing with scale drawings. Subjective in some jobs, as the MILLINER adapting existing hat designs to dramatize personal characteristics of customers, OR in stone carving when the interpretation of the diagram or model determines the artistry and beauty of the work.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Tangible, Productive Satisfaction in need to visualize and work toward final appearance or completed assembly, as in decorating a cake, fabricating articles from sheet copper, or making an accordion, including all steps from tuning to applying decorative finishing. Working with Machines, Processes, and Techniques in that jobs mainly involve self-centered activities that are carried out alone in relation to properties of materials, uses of tools, and specific techniques. Worker relates to job primarily in terms of his own skills and specialized knowledges, as in working with bench lathes to repair small optical parts OR using the technique of glass blowing to make hollow glass articles. Things and Objects in dealing with working properties of materials. For some jobs, Scientific as in applying principles of physics in making mounts of experimental electron-tube devices OR in using knowledge of bones, nerves, and limb structure in constructing orthopedic appliances. Abstract, Creative may be involved, as in sketching own ideas of diorama models and using as a pattern OR in planning and laying out complex parts, assemblies, and apparatus in research laboratory.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (BENCH WORK, PRODUCTION ASSEMBLING AND RELATED)

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Hands or hand tools are used to assemble, package, sort, cut, fit, or finish relatively small parts or materials at a bench, conveyor, work table, or similar position location. Some of the knowledges and abilities involved may be: tactile sensitivity to handle small (frequently delicate) parts and to judge smoothness, roughness, contour, or other surface qualities of objects. Attitude of great carefulness and respect for tools, equipment, and materials. Frequently ability to sit in a tense position all day. Many of these bench work jobs are those commonly associated with "the assembly line worker." These kinds of activities are distinguished by the special adjustment demands which they impose. Assembly line techniques may be applied to dressmaking, to electronic components, automobile parts, and thousands of other painstaking assemblies which involve many separate but simple and repetitive operations by the individual worker as the parts move down an assembly line. In such jobs, each operation is precisely defined, and the amount of time allowed for the particular task is set, within close limits. The moving conveyor establishes the pace of the work and the worker must adjust his own rhythm to its unvarying tempo. Although repetitive, the work is never automatic, as in some types of monotonous work, and requires his full attention at all times. He cannot learn to do the work "without thinking about it." He cannot daydream while he does it. Work which consists of endlessly repeated patterns of motions generates in many people a build-up of tension which culminates an explosive desire for some break in the work cycle. This is a fact to be considered in relation to the worker's adjustment capacities when this type of bench job is being considered.

RELATED COURSES: High school shop courses to become oriented to working with things. Aircraft Assembly, Artificial Flower Making, Assembling, Basketry, Beadwork, Bench Grinding, Broom Making, Chair Caning, Dressmaking, Electrical Coil Winding, Feather Working, Food Packing, Furniture Finishing, Garment Making, General Shop, Handicrafts, Hand Knitting, Hand Weaving, Industrial Arts, Manual Training, Metalwork, Needlework, Novelty Making, Painting, Raffia Work, Rug Making, Sandblasting, Sewing, Sheet Metalwork, Soldering, Toy Making, Trade Sewing, Upholstering, Welding. Any other course work involving assembling or finishing of fine items. Jobs are usually learned through on-the-job training.

PRODUCTION ASSEMBLING AND RELATED (Cont'd)

RELATED LEISURE PURSUITS: Any activities indicating ability to do fine work with hands: making artificial flowers, baskets, beads, trinkets, jewelry, needlework, embroidery, patchwork, crochet, or applique. Sewing, including mending, garment making, or other. Belonging to a sewing club. Hand knitting or weaving. Making hooked rugs. Framing pictures. Building birdboxes. Making dollhouses. Mending electric lamps, irons, and the like. Painting a room, "touching up" the automobile, etc. Doing the family ironing. Mounting photographs in album. Constructing tables, chairs, benches.

ILLUSTRATIVE TEMPERAMENT ROLES: Adaptable to Repetitive Work to work rapidly and attentively in monotonous situations as the man on an automobile assembly line, placing in a certain number of bolts in a certain number of seconds as a part moves by on a conveyor belt. Rigorous as the SHIRT HEMMER feeding fabric toward sewing machine needle, exercising constant care and attention to be certain the seam is even and straight OR the METAL FINISHER working to close tolerances in removing surface defects from machined parts, using hand files. Adaptable to Specific Instructions for many jobs, especially entry, which are under continuous close supervision.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Things and Objects in that worker's attention is continuously concentrated on activities such as assembling of parts or applying finishes to objects. Routine, Concrete Organized as the SEWING MACHINE OPERATOR performing one sewing operation such as the attaching of collars, over and over, perhaps 500 times a day. Tangible, Productive Satisfaction for many of the jobs in which the worker works toward completing a part or finishing it in an attractive manner, for example: TOY ASSEMBLER, JEWELRY POLISHER, PLAQUE MAKER, HAND EMBROIDERER.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (BENCH INSPECTING AND RELATED)

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Grading, sorting, or detecting flaws or irregularities in materials, products, or equipment. This requires sensory acuity to discriminate small differences in color, form, size, texture, odor, taste, etc. Speed of perceptual reaction. Use and reading of measuring instruments such as rulers, micrometers, microscopes, or magnifying glasses.

RELATED COURSES: Shop courses to acquire orientation to working with things. On-the-job training usual preparation.

RELATED LEISURE PURSUITS: Persons with a preference for pursuits which are sedentary, passive, and spectator in nature may find suitable jobs here.

ILLUSTRATIVE TEMPERAMENT ROLES: Adaptable to Repetitive Work in that most of the jobs require close and continuing attention to details. Rigorous in accurately discriminating small differences in color, form, size, etc. Objective in verifying adherence of product to specifications. For entry jobs particularly, adaptability to specific instructions in that worker may be very closely supervised.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Things and Objects in that time is consumed with sense impressions arising from direct contact with "things" relating to such characteristics as color, size, and texture. Routine, Concrete Organized in that methods are well-routinized and only specific, readily evident facts are involved. Working with Machines, Processes, Techniques as in testing transmission assemblies by running motors at different speeds, detecting fault by sound, or using mechanical testing equipment.

BASIC VOCATIONAL DIRECTION

STRUCTURAL WORK

Structural Craftsmen
Structural Work, Coordinative

STRUCTURAL WORK (GENERAL FIELD DESCRIPTION)

STRUCTURAL WORK contains activities which involve the positioning, cutting, fitting, joining, or finishing of structural materials. Typically, workers in such activities need physical agility and ruggedness to work in changing positions, frequently involving climbing and exposure to weather. They may be required to have a knowledge of the physical properties of materials such as stress resistance, durability, strength of seams or joints, and resistance to weather. The work generally occurs outside a factory of shop environment, but it may occur in connection with the assembly of structural materials on factory production lines. Tools used are usually hand or portable power tools. The work is done on objects such as rock formations, buildings, bridges, ships, airplanes, tanks, or motor vehicles.

It is typical of people in structural crafts that they obtain a sense of satisfaction and achievement from taking raw materials and "creating" or "making something" out of them. This may be a finely fitted door, completely painted and finished room, steel boiler that works, or well laid out water supply system. Capacity for spatial reasoning and appreciation in measurement are important. In many of the jobs the worker needs enough sense of color, form, and proportion to achieve finished appearances which are neat and attractive. Some jobs of a finish nature require the worker to approach artistic standards of workmanship. Other jobs involve rough work in which no sensitivity to appearance is involved. Much structural work is carried out by "teams" or "crews" and the worker may need to adjust to being one of a group. Structural work provides considerable opportunity for workers to establish an individual business. Many people prefer structural work to other trades because they can work outdoors.

For craft levels high school graduation is preferred. Helper and other supporting jobs do not have high literacy requirements. Journeyman status may be achieved by formal apprenticeship, learning the craft under an experienced worker, or progressing from helper through intermediate jobs to journeyman status.

STRUCTURAL. Work, training, and leisure pursuits in which structural materials (frequently very large) are positioned, cut, fitted, joined, laid out, or finished.

Explore
D.O.T. OGA's: 800 Riveters; 804 Tinsmiths, Coppersmiths, and Sheet Metal Workers; 805 Boilermakers; 806 Transportation Equipment Assemblers and Related Occupations; 807 Bodymen, Transportation Equipment; 809 Misc. Occupations in Metal Fabricating, n.e.c.;

810 Arc Welders; 811 Gas Welders; 813 Resistance Welders; 814 Brazing, Braze-Welding, and Soldering Occupations; 815 Lead Burning Occupations; 816 Flame Cutters and Arc Cutters; 819 Welders, Flame Cutters, and Related Occupations, n.e.c.;

840 Construction and Maintenance Painters and Related Occupations; 841 Paperhangers; 842 Plasterers and Related Occupations; 843 Waterproofing and Related Occupations; 844 Cement and Concrete Finishing and Related Occupations; 845 Transportation Equipment Painters and Related Occupations;

860 Carpenters and Related Occupations; 861 Brick and Stone Masons and Tile Setters; 862 Plumbers, Gas Fitters, Steam Fitters, and Related Occupations; 863 Asbestos and Insulation Workers; 864 Floor Laying and Finishing Occupations; 866 Roofers and Related Occupations; 869 Misc. Construction Occupations, n.e.c.

Related Career Possibilities: 850 Excavating, Grading, and Related Occupations; 851 Drainage and Related Occupations; 852 Concrete Paving Occupations; 853 Asphalt Paving Occupations; 859 Excavating, Grading, Paving, and Related Occupations, n.e.c.; 892 Hoisting and Conveying Occupations, n.e.c.; 899 Misc. Structural Work Occupations, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (STRUCTURAL CRAFTSMEN)

PERTINENT INFORMATION (Special requirements, cultural and sociological data): It has been said of the STRUCTURAL CRAFTSMAN, "the finish man": "Patience is his middle name. He is much involved with pride of reputation and has a personal stake in his workmanship. He has an eye for detail, respects order, and likes to straighten out the crooked, make smooth what is rough, rearrange the jumble. As he goes along, he visualizes how his work will look when it is finished. His sense of accomplishment comes from having what he has done look just right, all uneveness made plane, no panels a little off plumb, mortises ill-fitted, or fixtures set in crookedly. He handles things carefully and sometimes with surgeon-like precision. The measure of his job is how well the structure stands up and the flawlessness of its finished appearance." STRUCTURAL CRAFTSMEN require: Mathematical ability to calculate quantities of materials needed, allowance for waste, etc. Capacity for spatial reasoning. Appreciation of precision in measurement. Knowledge of working properties of structural materials. Understanding of structural factors such as stress resistance, durability, strength of seams and joints, resistance to weather, etc., and ability to anticipate effects of these in planning work. Physical agility and ruggedness to work in changing positions, frequently involving climbing and exposure to weather. Enough sense of color, form and proportion to achieve finished appearances which are neat, attractive, and on occasion, to meet artistic standards of workmanship. Read blueprints. Numerical aptitude, spatial aptitude, form perception, motor coordination, finger dexterity, and manual dexterity in some combination are useful aptitudes.

RELATED COURSE AREAS: In high school building trades, manual training, mechanical drawing, model building, sheet metal, shop, trowel trades, and woodworking. Courses: Acetylene Burning, Air Conditioning, Aircraft Assembling, Aircraft Rigging, Blueprint Reading, Boat Building, Boilermaking, Brazing, Bricklaying, Building Trades, Building Construction, Carpentry, Cement Finishing, Explosives, Glazing, Heating and Ventilating, Interior Decorating, Lead Burning, Lumber, Manual Training, Marble Setting, Masonry, Mechanical Drawing, Millwork, Model Building, Ornamental Iron Work, Ornamental Tile Work, Painting, Permastone Work, Pipe Fitting, Plastering, Plumbing, Rigging, Roofing, Sheet Metal, Ship Carpentry, Steam Fitting, Stucco Masonry, Tarrazzo Work, Tile Setting, Trowel Trades, Wallpapering, Welding, Woodworking.

RELATED LEISURE PURSUITS: Habits in everyday life which have indicated an interest in building and pride in workmanship. Drawing plans and building checken houses, breezeways, bird boxes, dog houses, window boxes, etc. Building fish or lily ponds, bird baths, garden walks, or patios out of cement. Laying flagstone terrace, linoleum, a tile hearth. "Doing-it-yourself" activities such as repairing and painting a house or room; wallpapering a room; painting or "touching up" the automobile; patching a leak in the roof; repairing the plumbing. Building an outdoor barbecue of brick. Model making. Carpentry workshop.

STRUCTURAL CRAFTSMEN (Cont'd)

ILLUSTRATIVE TEMPERAMENT ROLES: Rigorous in making plumbing fittings snug so they will not leak; accuracy in splicing ship rigging to make it seaworthy; matching adjacent edges of figured wallpaper precisely; or achieving exact fits in joints such as mortise, tenon, or dowel. Objective as in masonry work, constantly checking vertical alinement of brick courses (rows) with line guage and level to maintain uniformity OR keeping frame structure true to previously established reference points on the basis of data secured by transits, plumb lines, tapes, and levels. Valuative as the STONE MASON utilizing sense of line, proportion, and color harmony in chiseling and shaping stones, placing stones in pleasing arrangements from the standpoint of both color blending and juxtaposition of various shaped stones OR the CARPENTER utilizing finely developed sense of weights in counterbalancing structural members. Self-Controlled as in working on scaffolding, roofs, skeleton structures, and other heights which require steady nerves OR setting off explosives in excavating work, maintaining unwavering presence of mind to prevent accidents.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Tangible, Productive Satisfaction in that typically the jobs provide an opportunity for a sense of satisfaction and achievement for those who like to take raw materials and "create" or "make something" out of them, whether it be a finely fitted door, completely painted and finished room, steel boiler that works, or well laid out water supply system. Working with Machines, Processes, and Techniques as in applying terrazzo particles to floors and polishing hardened floor with a floor-surfacing machine. Things and Objects in that attention is constantly things-centered on use of tools and working properties of materials such as timbers, stucco, sheet metal, steel girders, brick, pipes, plaster, paint, cement, etc.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS (STRUCTURAL - COORDINATIVE LEVELS)

PERTINENT INFORMATION (Special requirements, cultural and sociological data): On COORDINATIVE levels of structural work, workers require: Enough space perception to position structural materials easily. Sufficient shop arithmetic to make simple calculations of materials and make measurements. Some knowledge of the working properties of materials. Facility in use of hands and on some jobs, of portable power tools. Physical agility and ruggedness to work in changing positions, frequently involving climbing and exposure to weather. In some jobs adjust to working under considerable time pressure. In some jobs, such as welding, tolerance for glare from torches. Jobs frequently require tolerance for noise and clatter. As in craft levels, numerical aptitude, spatial aptitude, form perception, motor coordination, finger dexterity, and manual dexterity in some combination are useful aptitudes.

The contrast between structural workers on craft and coordinative levels for many occupations is merely a matter of degree, with the approach to the work in less complex jobs essentially the same except that the work is simply less skilled, more routine, or confined to a phase of the activity rather than encompassing an all-around span of duties. However, many lower level structural jobs are typically performed by a very different type of person from the structural craftsmen, as depicted in this description of "the rough man": "The rough man is geared to speed. He slambangs and doesn't mind if things bump around. He tends to get his work satisfaction from making a big show -- a whole structure scaffolded up at the end of the day where nothing had been before. He works at a fast clip and he likes it that way -- to keep moving. He is not bothered by the hammerhead-pocked two-by-four, twisted braces and bent-over nails, the disorder, the crushing -- just so he is not held back by details. He likes action and for things to be going on. It is not in his repertory of behavior, if he is strictly the rough man, to fool around, to unwind wire trussing carefully so as not to damage the timbers. Turn him loose to uncrate the stove, the refrigerator, or the cabinet, and he is impatient of the careful wrappings, and the tape which keeps everything safely in place. It does not occur to him to check directions. He prefers the use of brute force to taking pains. The measure of his work is in how much he puts up and that it doesn't fall down afterwards. But he has no sense of elegance about it."

RELATED COURSES: Shop courses in high school. Blueprint Reading, Body and Fender Work, Brick Masonry, Building Trades, Calking, Carpentry and Millwork, Cement Finishing, Ironwork, Jackhammer Operating, Lathing, Linoleum Laying, Manual Training, Model Building, Painting, Pipelaying, Reinforcing Ironwork, Riveting, Roofing, Sandblasting, Sheet Metalwork, Shop Arithmetic, Shop Work, Waterproofing, Welding, Woodworking. Many of the jobs learned on the job.

RELATED LEISURE PURSUITS: Repairing and painting a house or room. "Touching up" the automobile. Patching a leak in the roof. Laying linoleum. Building birdboxes. Consider listings on craft level.

COORDINATIVE LEVELS (Cont'd)

ILLUSTRATIVE TEMPERAMENT ROLES: Rigorous in such operations as sawing structural members exactly along a marked line; careful preparation of walls for application of waterproofing materials; precisely aligning slate for roofing and fitting slate to ridges, valleys, and edges; and in giving reliable signals when directing movements of hoisting cable. Adaptable to Specific Instructions as people in construction work must be careful to obey rules and not take chances. Many jobs in which the work is done on scaffolds or around moving cranes, etc., and disregard of instructions might result in injury to self or others or damage to property. For many jobs, self-control is necessary in that nerves must be steady while working on high scaffolding or other dangerous construction sites.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Routine, Concrete Organized in that worker is expected to conform to standardized construction practices. Innovation would be out of place and a creative interest would not contribute to job satisfaction. Things and Objects in that worker's attention is continually directed to "things" such as structural materials, fittings, buildings, tools.

BASIC VOCATIONAL DIRECTION

MECHANICAL AND ELECTRICAL WORK

Mechanics
Electrical Work

MECHANICAL AND ELECTRICAL WORK (GENERAL FIELD DESCRIPTION)

MECHANICAL AND ELECTRICAL WORK contains the mechanical and electrical trades and supporting occupations. Trade level workers must be able to reason in terms of mechanical and electrical principles and to diagnose and correct faulty systems operation; read blueprints and diagrams; and use hands and small tools such as screw drivers, pliers and calipers, expertly. In mechanical trades the emphasis is upon understanding the functional nature of machines and the ability to visualize the interaction of parts and forces. In electrical trades the emphasis is upon understanding concepts such as voltage, amperage, resistance, circuitry, etc., and the functioning of systems which are activated by electrical forces.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Blueprint Reading, Electricity, Electronics, General Shop, Math Courses (algebra, geometry, trigonometry), Mechanics, Physics.

High school graduation is an asset. Helpers and other less complex levels require less. Preparation is usually by one of the following methods: (1) accumulated experience through a series of jobs in the trade; (2) through informal on-the-job training; and (3) formal apprenticeship. Armed Forces training is qualifying and sometimes hobby experience is a basis for entry. A variety of trade, manufacturers', and correspondence types of training are available for many of the jobs.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): It is typical of the people in this work that they derive great satisfaction in working with mechanical equipment to put it into working condition. An interest in electricity and things electronic as well is characteristic of those in electrical work. Capacity to reason in terms of mechanical and mathematical principles is mandatory for the mechanic and the electrician although supporting workers will require less ability. People in the work should enjoy working with their hands, with tools, and with machines, a great deal of physical activity, and moving from place to place. Numerical aptitude, spatial aptitude, form perception, motor coordination, manual and finger dexterity are the most frequently used aptitudes.

RELATED LEISURE PURSUITS: Bent toward mechanics, evidenced by background or experimenting with mechanical devices. Curiosity about the workings of electrical appliances; habit of "fixing" the family electrical appliances--toasters, irons, fans, TV, radio, clocks. Liking to study drawings of machines, assembly instructions for appliances, etc. Strongly motivated to solve mechanical problems on own. Repairing motors and engines; collecting old parts and constructing assemblies. Science Fair electrical projects. "Ham" radio operating. Radio or electricity club. Scout radio or electricity badge. Reading Popular Science, Popular Electronics, Mechanix Illustrated, Popular Mechanics. Sports such as football, gymnastics, hockey, wrestling, hiking, evidencing strength and agility.

ILLUSTRATIVE TEMPERAMENT ROLES: Objective in analyzing machine or electrical circuit malfunction to perceive and deduce cause-and-effect relationships. Valuative in diagnosing machine malfunction on basis of own expert knowledge and in making judgments on basis of highly developed sensory sensitivities, e.g., a worker judging the accuracy of crankshaft bearings by the "feel" of the crankshaft as he turns it. Rigorous in using precision measuring instruments and making precise adjustments.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Working with Machines, Processes, Techniques in that worker is involved with mechanical parts and processes and relates to his job primarily in terms of his own skills and judgments. Tangible, Productive Satisfaction in completing all kinds of mechanical operations and bringing equipment into good working order. Things and Objects in that these workers' attention is almost continuously engaged in the behavior of materials and forces and the quantitative testing of this behavior.

MECHANICS. Work, training, and leisure pursuits which involve the disassembly, repair, reassembly, installation or maintenance of machines and mechanical equipment.

Explore DOT OGA's: 620 Motorized Vehicle and Engineering Equipment Mechanics and Repairmen; 621 Aircraft Mechanics and Repairmen; 622 Rail Equipment Mechanics and Repairmen; 623 Marine Mechanics and Repairmen; 624 Farm Mechanics and Repairmen; 625 Engine, Power Transmission, and Related Mechanics; 626 Metalworking Machinery Mechanics; 627 Printing and Publishing Mechanics and Repairmen; 628 Textile Machinery and Equipment Mechanics and Repairmen; 629 Special Industry Machinery Mechanics; 630 General Industry Mechanics and Repairmen; 631 Powerplant Mechanics and Repairmen; 632 Ordnance and Accessories Mechanics and Repairmen; 633 Business and Commercial Machine Repairmen; 637 Utilities Service Mechanics and Repairmen; 638 Misc. Occupations in Machine Installation and Repair; 639 Mechanics and Machinery Repairmen, n.e.c.

Related Career Possibilities: 70 Occupations in Fabrication, Assembly, and Repair of Metal Products, n.e.c.; 71 Occupations in Fabrication and Repair of Scientific and Medical Apparatus, Photographic and Optical Goods, Watches and Clocks, and Related Products; 72 Occupations in Assembly and Repair of Electrical Equipment; 73 Occupations in Fabrication and Repair of Products Made from Assorted Materials; 017 Draftsmen, n.e.c.

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Entrants to the mechanical repairing fields qualify by three basic methods: (1) accumulated experience through a series of jobs in the trade; (2) through informal on-the-job training; and (3) apprenticeship or other formal school. The largest group, AUTOMOBILE MECHANICS, usually start as helpers and acquire the skills of their trade informally or by working several years with experienced mechanics. DIESEL MECHANICS usually begin as helpers but some acquire their skills through apprenticeships. In INDUSTRIAL MACHINERY, some begin as helpers and some as apprentices. AIR-CONDITIONING and REFRIGERATION MECHANICS more often begin as helpers as do TEXTILE REPAIRMEN. The MILLWRIGHT may begin either as a helper or apprentice. MARINE MECHANICS AND REPAIRMEN who must machine the parts they use may be required to qualify as MACHINISTS. OFFICE MACHINE REPAIRMEN usually learn their trade at manufacturers' special school. ORDNANCE MECHANICS are usually trained in the Armed Services. PRINTING AND PUBLISHING MECHANICS are usually apprenticeable. AIRPLANE MECHANICS, who must be licensed by the FAA, may qualify by passing a written examination after graduating from an FAA approved mechanics' school. It is possible for a helper to work up and qualify by passing the examination. Some colleges and technical schools offer two-year training programs for this work. Civilian jobs in aircraft repair are frequently filled by those whose skills were acquired in the Armed Services. High school courses in mathematics, physics, sheet metal and electric shop, and mechanical drawing are valuable.

Specific valuable courses: Air Conditioning, Armament Repair, Automobile Mechanics, Blueprint Reading, Diesel Engines, Furnace Repairing, Gas Engines, Heating and Ventilating, Internal Combustion Engines, Machine Shop, Marine Engine Mechanics, Mechanical Drawing, Mechanical Maintenance, Mechanics, Office Machine Repair, Metal Body Repair, Pumping, Refrigeration, Repairing Motors, Shop Mathematics, Stationary Engines, Steam Boilers and Engines, Steam Power, Textile Machines, Weapons Mechanics.

RELATED LEISURE PURSUITS: Habits of observing and experimenting with mechanical devices. Tinkering with automobiles: adjusting ignition, soldering leaking radiators, replacing spark plugs, tightening screws and bolts, repairing dented fenders. Collecting parts from junkyard to remodel car or build a "hot rod;" collecting usable parts of bicycles, motors, etc., and reconstructing into assemblies that will run. Taking apart and reassembling automobile engines, bicycles, pumps, typewriters, guns. Repairing tractors, plows, outboard motors, mowing equipment. Collecting and tinkering with firearms. Making model airplanes, power boats, engines. Inventing mechanical devices. Learning to read blueprints. For mechanics who work with heavy machinery, activities which involve physical strength and agility such as football, gymnastics, and hiking.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): It is typical of the mechanics that they derive great satisfaction in working with various kinds of equipment to find out why it does not operate properly and putting it into working condition. They tend to prefer mechanical repair and set-up over machine operating to produce materials. Mechanics often work in drafty surroundings and the work is frequently noisy, dirty, and dusty. Often they are required to assume many positions while working, such as crouching, kneeling, bending, and lying under vehicle. Specific requirements: Ability to understand the functional nature of machines and to visualize how a part will function by observation of it. Skill in use of wrenches, pliers, and other hand tools. Good memory for patterns of arrangement. Problem-solving ability. Read and understand blueprints.

ILLUSTRATIVE TEMPERAMENT ROLES: Objective in compiling readings from test tryouts, gaging instruments, etc., as a basis for determining necessary repairs to motors OR in reassembling airplane parts, referring to manufacturer's specifications for data on which to plan work. Valuative in improvising working arrangements of parts either in the absence of blueprints or on occasions when worker must substitute and get along with what parts are available OR in diagnosing machine malfunctions. Rigorous as in using precision measuring devices such as squares, micrometers, calipers and plumb bobs in installing machines in correct position and in alining shafting and pulleys. Versatile when working with many kinds of equipment such as pumps, armaments, and steam, Diesel, or electrical auxiliaries on a ship OR in factory maintenance involving skill in several trades in order to keep machines, mechanical equipment, and structures in good repair.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Working with Machines, Processes, Techniques in that worker relates to his job primarily in terms of his own skills and judgments as the LOOM FIXER correcting warp tension by adjusting counterweights OR the MOTOR ANALYST setting up and interpreting various engine tests. Tangible, Productive Satisfaction as with the KNITTER MECHANIC building up chain links to produce a specific design in knitted fabric and running a sample of design to ascertain that machine is properly set up to knit the design perfectly. Things and Objects in that worker's attention is constantly involved with things: examining parts for wear and defects and observing the mechanical functioning of all kinds of assemblies.

ELECTRICAL (Incl. ELECTRONIC) WORK. Work, training, and leisure pursuits in which electrical and electronic equipment is repaired, installed, or maintained in operation. The work may involve such electrical equipment as motors, transformers, generators, switches, relays, and fixtures and also modern electronic equipment such as amplifiers (transistorized and vacuum tube), radio and television receivers and transmitters, computing machines, telemetering devices, industrial monitoring and continuous control systems, radar and other object-detecting devices, photoelectric equipment, cyclotrons and accelerators, etc.

Explore DOT OGA's: 72 Occupations in Assembly and Repair of Electrical Equipment; 82 Electrical Assembling, Installing, and Repairing Occupations; 952 Occupations in Generation, Transmission, and Distribution of Electric Light and Power

Related Career Possibilities: 184 Transportation, Communication, and Utilities Industry Managers and Officials; 257 Salesmen, Utilities

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

There are five main training areas in this type of work. Fundamental to all of them is the application of the principles of basic electricity. Entrants qualify by three methods: (1) accumulated experience through a series of jobs in the trade; (2) through informal on-the-job training; and (3) formal apprenticeship. Armed Forces training is qualifying and sometimes hobby experience is used as a basis for entry. Many types of trade, manufacturers', and correspondence courses in electricity and electronics are available.

ELECTRICAL WORK, CONSTRUCTION AND MAINTENANCE. Laying out, installing, and repairing electrical wiring and equipment systems. Electrician apprenticeship preferred, but some qualify by on-the-job training.

ELECTRICAL APPLIANCE REPAIR. Maintenance, installation, and repair of electrical appliances which are activated by electrical motors, heating elements, etc. Training on the job or attending manufacturer's school usual means of qualifying.

TV AND RADIO REPAIR. Maintenance, installation, and repair of television transmitters, receivers, and audio equipment. On-the-job, trade school, or manufacturer's school usual means of qualifying.

ELECTRONICS. Maintenance, installation, and repair of electronic devices and systems. Technical institute, trade school, or apprenticeship training usually necessary to qualify.

ELECTRICAL POWER-PLANT OPERATING, REPAIRING. Operation and maintenance of electric power plants for generation and transmission of electricity. Employing utilities usually use laboring jobs for recruiting personnel who may work up as they show ability.

RELATED COURSE AREAS: High school graduation is usually required, but some work up without it. In high school, valuable courses are algebra, physics, geometry, mechanical drawing, and all electrical courses.

Related Courses: Alternating Current, Automation Electronics, Basic Electricity, Battery Electricity, Blueprint Reading, Circuit Construction, Circuitry, DC and AC Current, Distribution Transformers, Electric Motors, Electric Wiring, Electrical and Electronic Testing, Electricity, Electronics, Interior Wiring Practices, Lighting Line Construction Practices, Motors and Generators, Neon Tube Lighting, Physics, Power Generating Plants, Power Plant Operating, Principles of Electromagnetism, Radar, Radio Mechanics, Radio Receivers and Transmitters, Refrigeration, Telegraphy, Telephony, Television Installation and Repair.

RELATED LEISURE PURSUITS: Ham operating and winning amateur's operator's license. Winning Scout Merit Badge in electricity or radio. Home workshop. Reading electronics magazines. Adjusting automobile generator and ignition. Repairing electric irons, fans, clocks, TV, radios; installing antennas, changing fuses; locating short circuits. Constructing amplifiers, etc., from do-it-yourself kits. Collecting second-hand parts and building own "hi-fi" or "stereo." Belonging to radio club. Constructing burglar alarms, signal systems, etc. Tinkering with magnets. Attending high fidelity shows. Studying manufacturers' instruction booklets and technical magazines covering electronics service work. Sound recording as a hobby.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): A genuine interest in electricity or electronics seems to be the most usual motivation for entering electrical work. Particularly in electronics and audio work, the person who has picked up considerable "know-how" as a hobbiest and thoroughly enjoys building his own radio or other electronic device may eventually move from hobby to vocation. Ability to reason in terms of mechanical principles, good near vision, normal color discrimination, eye-hand coordination, manual dexterity, and auditory acuity are needed for most jobs in electrical work. Repairmen who deal with the public need to make a neat appearance, have good manners, and be able to explain work clearly to customers. Many jobs require the verbal ability to interpret technical instructions.

Other: Electrical principles associated with circuits, electronic tubes, conductors, and ohms. Electrical codes and national and local code regulations. Blueprint reading. Ability to set up and use electrical and electronic testing equipment. Frequently required is a state or local license, based on an examination.

ILLUSTRATIVE TEMPERAMENT ROLES: Objective in making decisions and judgments on data secured from measuring, indicating, and recording instruments. Rigorous in strict adherence to electrical codes in situations where a mistake could be dangerous to worker and expensive equipment OR in controlling electricity-generating units in a manner to maintain a specified flow of electricity and avoid overloading circuits. Valuative when contriving, on the basis of experience, workable assemblies of electronic units, or in selecting out of a wide variety of possibilities, types of tests to make. Performing adequately under stress when repairing or replacing lines out during fire, floods, or storms, or when working with high voltage lines and equipment.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Working with Machines, Processes, and Techniques as in wiring circuits; setting up testing equipment; alining stages, condensers, and generators; or maintaining automated equipment in operating condition. Things and Objects in that worker's attention is almost continuously engaged in the behavior of materials and forces and the quantitative testing of this behavior. Tangible, Productive Satisfaction in such activities as constructing a complete electrical or electronics assembly OR in installing and putting into proper operation elevators, electric ranges, television sets, etc. Scientific in acquiring and applying knowledge of electrical-electronic technology and respect for scientific principles in activities such as laying out experimental circuits and setting up and carrying out various tests. Business Contact for workers in the field who must exhibit politeness and be able to deal with the public in a businesslike manner.

BASIC VOCATIONAL DIRECTION

GRAPHIC ARTS

GRAPHIC ARTS (GENERAL FIELD DESCRIPTION)

The GRAPHIC ARTS include the printing arts and crafts which encompass composition (hand and machine), platemaking, presswork, and bookbinding; art work photography and darkroom work; and the hand copying or altering of designs or lettering by means of paint brushes, air brushes, drawing pens, pencils, and similar hand tools.

The beginnings of printing art as a basis for effecting communication are at least as remote as ancient Babylon. Throughout a long history the arts and crafts associated with printing have undergone evolution and change which manifests itself today in a technological revolution of production methods. These changes, primarily in the areas of type composition, platemaking, and bindery operations, include the increasing use of electronic devices such as computers, electronic etching and color-separating equipment, and electronic controls for highly mechanized bindery equipment.

The population grows, educational levels go up, knowledge is doubling; the resulting information explosion requires an ever-increasing production of printed material. Lithographic craftsmen (offset printing) are the most involved in handling this snowballing volume of print.

From the standpoint of raw abilities required by the various occupations included in GRAPHIC ARTS a case can be made for separating and regrouping them with other occupations. However, the occupational culture and solidarity of these occupations, the "smell of print" aura with which they have become invested, is so distinct that they are best treated as a single work field. Another factor which binds them together is the apprenticeship system to which they are so tightly bound. No apprenticeship has a longer tradition than the well-known "printer's devil." However, photography and those occupations which are quite specifically art-related are not within the tight-knit apprentice structure. Another exception is newly emerging jobs such as type-perforating machine operators who must be expert typists and acquire their skills through commercial courses.

Some relationships between GRAPHIC ARTS and other types of work can be noted. People in THE ARTS and the GRAPHIC ARTS share an artistic sense, but the persons in THE ARTS are more involved in original work and they tend to be strongly individualistic. There are similarities between persons in GRAPHIC ARTS and clerical workers, especially those who operate keyboards. However, although there is a grey area involving the two, the clerical worker is distinctly "white-collar" whereas the graphic arts worker must adjust to a mechanized environment, to working with large machines and equipment which require mechanical aptitude to adjust, and to having hands and clothes soiled as works with oil, grease, ink, and chemicals. Yet the people in GRAPHIC ARTS differ greatly from most other machine operators in that they require a good knowledge of spelling, punctuation, and English grammar to catch errors, e.g., before setting type and expertness in judging the appearance and quality of printed materials.

GRAPHIC ARTS. Work, training, and leisure pursuits concerned with the reproduction of designs, illustrations, or typed materials by means of such processes as painting, printing, or photography and related graphic arts trades such as bookbinding.

Explore D.O.T. OGA's: 650 Typesetters and Composers; 651 Printing Press Occupations; 652 Printing Machine Occupations; 653 Bookbinders and Related Occupations; 654 Typecasters and Related Occupations; 659 Printing Occupations, n.e.c.; 97 Occupations in Graphic Art Work which includes as breakdowns 970 Art Work Occupations, Brush, Spray, or Pen; 971 Photoengraving Occupations; 972 Lithographers and Related Occupations; 973 Hand Composers, Typesetters, and Related Occupations; 974 Electrotypers and Related Occupations; 975 Stereotypers and Related; 976 Darkroom Occupations; 977 Bookbinders and Related; and 979 Occupations in Graphic Art Work, n.e.c.; 704 Engravers, Etchers, and Related

Related Career Possibilities: 740 Painters, Brush; 741 Painters, Spray; 141 Commercial Artists; 142 Designers; 143 Occupations in Photography; 144 Painters and Related Occupations; 149 Occupations in Art, n.e.c.; 773 Occupations in Coloring and Decorating Brick, Tile, and Related Products

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: In high school, algebra, geometry, chemistry, physics, and English are important, and of course, all art courses. Many of the jobs are entered only through apprenticeship training. Correspondence school training is available for many of the jobs. Courses: Air Brush, Applied Art, Art Appreciation, Art-craft Design, Brush and Pen, Camera, Charcoal Sketching, Chemistry, Color, Color Theory, Commercial Art, Commercial Design, Composition, Crayon Sketching, Darkroom Work, Design, Drafting, Drawing, English Grammar, Engraving, Etching, Film Developing, Fine Art, Freehand Drawing, Graphic Art, Industrial Art, Keyboard, Layout, Lettering, Linotype Operating, Lithographing, Microfilm, Motion Picture Photography, Painting, Pen and Ink Drawing, Pencil Drawing, Perspective, Photostat Operating, Poster Making, Presswork, Printing, Printing and Movable Type, Proofreader's Marks, Punctuation, Show Card and Sign Writing, Sign Painting, Silk Screen Printing, Sketching, Spelling, Water Color Painting.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): These people may see themselves primarily as artists or as craftsmen. However, the activities are for the most part, concerned with excellence in the reproduction of forms which have already been created and do not provide the opportunity for original work which are offered in the fine and creative commercial art fields. People with interest in and limited, but not outstanding, artistic talent frequently find satisfying careers in this field. Too much originality, however, may be a handicap and lead to dissatisfaction. People with a high capacity for craftsmanship find many opportunities in graphic arts. Among the special knowledges and abilities associated with the field: Esthetic judgment. Sense of balance and proportion. Color discrimination. English grammar, spelling, punctuation. Proofreader's marks. Reading in reverse. Keyboard operating. Measurements such as ems, picas, and points. Properties of paper. Physics and chemistry of color -- how to mix, blend, and match colored inks, paints, and other ingredients. How to work with air brushes, pens, etching needles, and chemical, etching, and developing compounds. Photographic measurements in terms of time, light density, and lens characteristics. Attentiveness

to detail and ability to perceive errors and flaws in plates and copy are required. Ability to visualize objects and their arrangement in space. Ability to diagnose malfunctions in equipment. Normal near vision and normal color discrimination are required. Intelligence, verbal aptitude, numerical aptitude, clerical perception, form perception, motor coordination, finger and manual dexterity in some combination are useful aptitudes.

RELATED LEISURE PURSUITS: Hobby of engraving designs on pins, rings, loving cups, etc. Making high score on art judgment tests. Winning in art contests. Setting type for school paper. Visiting art museums. Attending or arranging art exhibits. Reading art publications. Belonging to camera club or art group. Doing freehand lettering and sketching. Reproducing lettering, designs, and drawings to exact scale. Drawing greeting cards, programs, place cards, etc. Copying scenes from magazines or copying paintings. Painting with oils. Copying maps, charts, posters, carving woods. Mixing and matching paints, making etching. Designing patterns in tiles or making linoleum block designs for wall decorations. Cutting silhouettes. Etching monograms. Burning designs in wood. Carving totem poles. Freehand decoration of pottery, ceramics, china. Making and laying out embroidery designs. Touching up photographs. Making photographic copies of drawings. Making posters to advertise a school play. Amateur photography; having own darkroom, developing, printing, and enlarging photographs. Reading photography magazines or books about color chemistry. Operating photostát equipment for school or club. "Making up" school paper. Operating a keyboard of any kind. School activities such as "getting out" school paper, programs, booklets on hobbies, club activities, etc. Bookbinding hobbies, visiting bindery shops, engraving establishments. Part-time work in bindery or print shop.

ILLUSTRATIVE TEMPERAMENT ROLES: Rigorous in blending paints, inks, etc., to match exactly offbeat hues and tints; reproducing drawings to scale; being careful in spelling, punctuation, and hyphenation; or following strict directions as to time and temperature requirements in developing film. Objective as the COMPOSITOR setting type by hand, measuring sample of copy to be set up with line guage to determine length of lines OR the COLORIST tinting valentines and calendars by hand, comparing frequently with chart of specified colors to maintain uniformity throughout lot, OR the OFFSET-PRESSMAN making ready the printing press, running proof sheet and adjusting inking mechanism accordingly, to produce properly printed sheets. Valuative as the COMPOSITOR setting up material, for which there are no instructions, by visualizing finished product and setting type to conform to mental image OR the PROCESS ARTIST changing undesirable details of illustration copy to be reproduced, using expert judgment as basis for intensifying or reducing unsatisfactory tone values. Subjective as in coloring photographs, guided by own taste in applying light and shade to give a life-like appearance.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Tangible, Productive Satisfaction in that typically the jobs require a worker who likes to visualize and work towards final appearance, as the COMPOSITOR using hands to set type for newspaper headlines, making minute adjustments to achieve the proper spacing and balance effect OR the DECORATOR freehand painting designs on glass objects with ceramic colors. Working with Machines, Processes, and Techniques in working with linotype, engraving, photostat, blueprinting, bookbinding, casting, and other machines OR in carrying out processes and techniques such as opaguing film or glass, using etching acids in half-tone reproduction, or using screen to break up shadings of copy into dots for half-tone printing.

INTERESTS - VARIABLE: Abstract, Creative as in sketching original designs for engraving jewelry; or using crayon to create designs on lithographic stones to be engraved by stone engraver. Scientific to apply principles of physics and chemistry of color and to use scientific testing instruments, such as a sensitometer.

BASIC VOCATIONAL DIRECTION

MINING

MINING (GENERAL FIELD DESCRIPTION)

Occupations in MINING frequently go under the same job titles as nonmining occupations; they may involve the same job tasks and require the same aptitudes. The work may involve using a pick and shovel, using a drill to drill holes, laying tracks, loading cars, timbering walls, setting off explosives, or operating complex equipment. Such activities, when they occur in the MINING industry, are treated separately here because they require a special adaptation from workers because of the unique environment, i.e., underground. This is an important consideration in vocational choice and adjustment.

Minerals are taken from the earth in all fifty states. Coal, iron, gold, zinc, copper, oil, and gas are the chief mineral products but among others of importance are lead, potash, sulphur, stone, salt, aluminum, tin, tungsten, clay, lime, and slate.

Minerals are taken from the earth in various ways. Coal and different metals are mined underground or by the open-pit method. "Strip" method applies to one type of coal extraction. In underground mining, shafts must be made and sunk into the earth, elevators installed, and tunnels driven out from the shaft at the various levels where the minerals are. In open-pit mining, the soil on top of the mineral is removed and the mineral taken out directly. Oil and gas is drawn out of the earth by means of wells. Salt is usually mined by sinking wells into the salt deposits, introducing hot water to dissolve the salt, pumping the brine to the surface, and evaporating the water. The salt then remains in crystals. Sulphur mining is similar but hot steam is pumped into the sulphur beds. Quarrying is the extraction of stone from the earth. The topsoil may be removed and the miners or mining machines then cut directly into the mineral. In large stone quarries the stone is sawed or blasted out in blocks.

Automated operations have been introduced widely into mining and the highly mechanized operations require skilled operators of the equipment. However, jobs of all levels of complexity occur. The miner is restricted in mobility. He can live and work only where the miners are. He must wear elaborate safety equipment and adhere to rigorous safety regulations.

MINING. Work, training, and leisure pursuits concerned with the quarrying and the extraction of minerals, such as coal, ores, crude petroleum, and natural gas.

Explore D.O.T. OGA: 93 Occupations in Extraction of Minerals

Related Career Possibilities:
42 Misc. Farming and Related Occupations;
51 Ore Refining and Foundry Occupations;
54 Occupations in Processing of Petroleum, Coal, Natural and Manufactured Gas, and Related Products;
57 Occupations in Processing of Stone, Clay, Glass, and Related Products;
85 Excavating, Grading, Paving, and Related Occupations;
86 Construction Occupations, n.e.c.;
89 Structural Work Occupations, n.e.c.;
90 Motor Freight Occupations
92 Packaging and Materials Handling Occupations
94 Occupations in Logging

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSES: Many high schools in mining areas offer special courses pertaining to employment in mines. Valuable courses are mathematics, chemistry, physics, mechanical shop, and electrical shop.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Despite mechanization and modern mine construction, certain features of mining remain to make specific demands on the worker's adjustments. He is subject to more risks than people in most occupations because cave-ins, explosions, flooding, and the escape of deadly gases may put his life in jeopardy, although these hazards are largely controlled by modern equipment and safeguards. The miner is a member of a team which requires from his complete cooperation from others and willingness to risk life for the safety of the group. He must accustom himself to spending his working hours in a man-made space inside the earth where he seldom sees daylight.

RELATED LEISURE PURSUITS: Leisure time pursuits which are associated with mechanical, structural, and processing types of work may also be associated with types of activities which occur in mining.

ILLUSTRATIVE TEMPERAMENT ROLES: Rigorous in following all safety regulation to the T. Self-Controlled in case of fire, cave-in, or other potential catastrophe as escape from perilous situations is possible only if worker keeps his wits about him. Objective in making judgments on the basis of dependable facts. Gregarious to be an effective member of the closely-knit team which is typical of the mining situation. The miner must often be subject to very specific instructions and he must be adaptable to this.

ILLUSTRATIVE INTEREST INVOLVEMENTS: In Mining the worker is surrounded by materials, machines, and tools and he tends to be oriented to Things and Objects. Working with Machines, Processes, and Techniques in that he is occupied with the operation of machines and the processes and techniques which comprise mining operations.

BASIC VOCATIONAL DIRECTION

ELEMENTAL

ELEMENTAL (GENERAL FIELD DESCRIPTION)

ELEMENTAL is a designation for the kind of activities which are most suited to the needs of the least cultivated of employable individuals. Occupations of this nature involve a few steps only. Typical activities are: helping other workers, supplying or unloading machines, transferring materials, using hand tools when activities do not require close observation or manipulative ability. The work may be done in homes, farms, institutions, or commercial, industrial, or construction sites. These jobs may be dead-end but on the other hand they may offer entry possibilities for persons to begin on the bottom rung of a skill ladder.

ELEMENTAL WORK - TYPES OF. The following types of elemental work may be distinguished in terms of their varying demands upon the worker.

ELEMENTAL WORK, SEDENTARY AND LIGHT. Work that can be performed by persons who are restricted because of factors as size, weight, age, or disability to simple routine tasks not requiring much physical effort.

Explore: DOT occupations which are indicated as sedentary or light and coded with only one significant worker function -

6 in fourth place (data) - Comparing
6 or 7 in fifth place (people) - Speaking-Signalling or Serving
7 in sixth place (things) - Handling

ELEMENTAL SERVICE. Work in a domestic or personal service environment involving such simple routine tasks as cleaning, yardwork, dishwashing, dusting, and related.

Explore: Jobs in DOT which are coded with only one significant worker function -

6 or 7 in fifth place (people) - Speaking-Signalling or Serving
7 in sixth place (things) - Handling

EQUIPMENT SERVING AND RELATED. Work involving simple routine tasks in industrial or commercial establishments, in which workers are either paced by machines or must perform tasks so as not to delay production processes. Usually, workers must be able to adjust to monotony in the work situation and sometimes to unpleasant physical conditions.

Explore: Jobs in DOT which are coded with only one significant worker function -

6 in sixth place (things) - Feeding-Offbearing

MISC. PHYSICAL WORK. Work on construction projects, in yards, on loading platforms, in maintenance crews, and in other situations where the worker is not made responsible for production standards. Use of large skeletal muscles and superior strength of grasp, back, and legs are frequently required in such physical activities as lifting, carrying, pushing, pulling, stooping, crouching, and reaching.

Explore: Jobs in DOT which are coded with only one significant worker function -

7 in sixth place (things) - Handling

COUNSELEE DISCUSSION INFORMATION AND APPRAISAL FACTORS

RELATED COURSE AREAS: Rather than considering specific courses in relation to elemental type of work, the counselor takes into account the following types of evidence: A poor school record; attending special schools, upgraded classes, or remedial track; rejection from the Armed Forces; evidence of poor reading or writing ability. Such factors may lead to consideration of elemental work as a vocational possibility for the counselee.

PERTINENT INFORMATION (Special requirements, cultural and sociological data): Workers in elemental type of activities are not required to meet rigorous conformity to a standard or to use judgment in deviating from an established pattern of performance in the face of unforeseen job problems. Bodily integrations required are either repetitive or so gross as to form little in the way of technique or pattern in the sense of skills found in more complex activities. Excessive working speed is not required. Tasks often do not involve the worker in significant awareness of their purpose. No job knowledge is needed other than readily evident facts arising from immediate circumstances of the job.

There is no requirement for the worker to cope with a structured environment or to deal with data in the form of measurements and diagrams. His attention is usually directed to the very manifest properties of things--such as deciding whether an article is too large or too small, when containers are full, how to stack articles or arrange things neatly, when something is cleaned well, and the like. His interest involvement is with the concrete rather than with ideas, techniques, or communication with people.

RELATED LEISURE PURSUITS: When the individual is difficult to elicit information from, has trouble in understanding the meaning of questions, is puzzled or inarticulate about hobbies, especially those of an intellectual or skill-exercising nature, this may be evidence for relating his vocational exploration to elemental type jobs. Other situations pointing in this direction: when he has had many short jobs which did not pan out, lacks the physical or mental stamina for more demanding jobs, or needs a low tension environment, i.e., not requiring him to maintain a rigid focus of attention and perhaps offering some leeway for occasional oversight.

When course and hobby information does not yield evidence sufficient to explore occupational possibilities, the counselor can probe daily activities and the person's reactions and capacity in dealing with these. For example, military and camp experiences should have given training in personal cleanliness, arrangement of belongings, and keeping surroundings clean. Evidence of physical stamina can be deduced from lifting experience such as moving furniture, pushing cars, etc. The counselee may have swept and mopped floors, carried groceries, run errands, tended and cleaned up household appliances such as washing machines, stoves, and refrigerators. He may have engaged in ball playing, dancing, hiking, swimming, target practice or cared for dogs, horses, cats, birds, fish, reptiles. All such activities can be indicative of habits, attitudes, and capacities which might evidence employability in a job of some kind.

ILLUSTRATIVE TEMPERAMENT ROLES: Adaptable to Specific Instructions in that jobs do not require workers to decide anything, for example, the LOADER HELPER, MACHINE who carries out his chores as instructed OR the BEAN PILER who may not be constantly supervised, but whose one duty consists of a specific task laid out for him. Adaptable to Repetitive Work for those jobs involving repetitive one- or two-step tasks. However, this adaptability to repetitiveness required in elemental work is not to be confused with the adaptability to repetitivenss on the assembly line which requires a high and continuous degree of mental concentration. In elemental work, the emphasis is upon sameness and freedom from the unexpected. There is some leeway for occasional oversight and the jobs do not require the worker to maintain a rigid focus of attention on a repetitive process.

ILLUSTRATIVE INTEREST INVOLVEMENTS: Things and Objects in that workers usually do not have to cope with a structured social environment or deal with such data as measurements and diagrams. Their attention is usually directed only to very manifest properties of things -- such as deciding whether an article is too large or too small, when containers are full, how to stack articles, and the like. Routine, Concrete Organized - although organized methods and regulations beyond one- or two-step procedures are not involved, the interest direction is toward the concrete rather than ideas, techniques, or communication with people.

☆ U.S. GOVERNMENT PRINTING OFFICE : 1967 O—247-118